

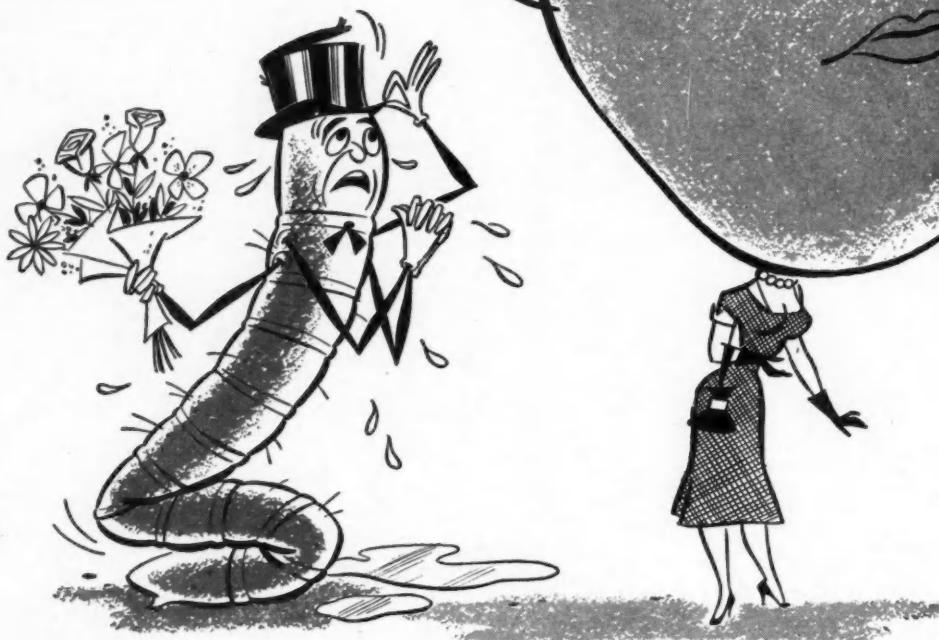
American Vegetable Grower

FEBRUARY • 1955



LET YOUR SOIL TELL YOU ITS NEEDS

**Quality
potatoes
don't
go with
wireworms**



Wise growers kill wireworms—

with

aldrin

Wireworms in potato soil are among the primary causes of potato downgrading. Aldrin gets them . . . it works fast and provides a whole season's protection with just one application. Aldrin does not affect the flavor nor leave a harmful residue when used according to recommendations. It is economical and easy to use as dust or spray in a broadcast treatment . . . or in a fertilizer mix. Get aldrin from your local dealer.

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AGRICULTURAL CHEMICALS DIVISION
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FEBRUARY,

LOOK

LOOK HOW MUCH it pays to package in film made of BAKELITE Polyethylene



Data supplied by The Dobeckmum Co., Cleveland, Ohio.

**"Potato sales went up 32%
Apple sales went up 34%
Orange sales went up 52%"**

That's the experience of but one of many big supermarkets... after merchandising fruit and vegetables packaged in film made of BAKELITE Polyethylene.

A very important point for growers and shippers to remember is that packaging in polyethylene bags drastically cuts waste at the retail level. Premium prices at the grower level are better protected.

A second and just as important advantage is the ability to create brand identity at the grower level. It has been well indicated that retailers, even though they do their

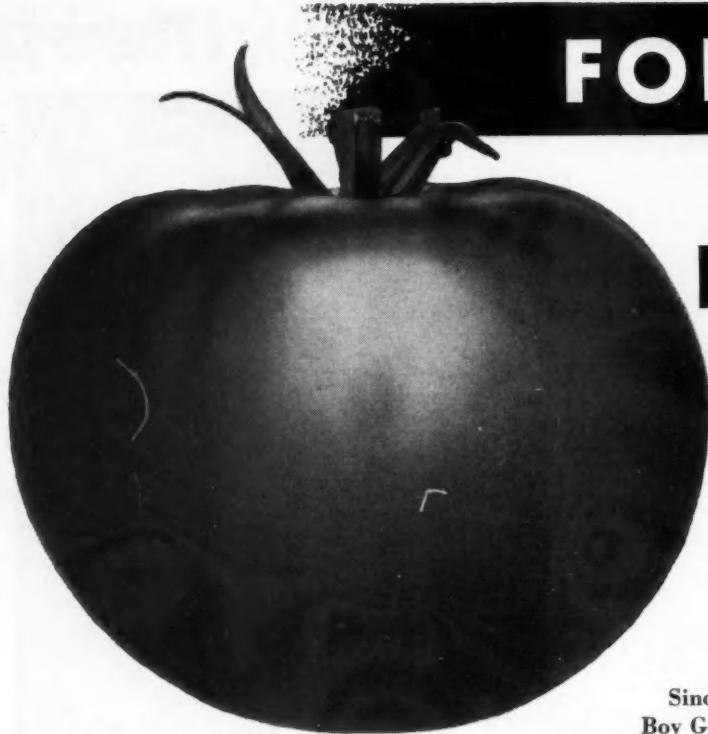
own pre-packaging today, would prefer to buy produce already packaged in polyethylene (and obviously at a higher unit price than growers receive for bulk shipments).

Throughout the country, there are suppliers of packaging bags made of film produced from BAKELITE Polyethylene. See your own local supplier and get the facts right now. And remember, when you specify film made of BAKELITE Polyethylene, you know the resins used are of uniform high quality assured by Bakelite Company, largest producer of polyethylene.



BAKELITE COMPANY, A Division of Union Carbide and Carbon Corporation UCC 30 East 42nd Street, New York 17, N.Y.

FEBRUARY, 1955



FOR BIGGER

Burpee's BIG BOY GIANT HYBRID

*... For six years
unsurpassed
for yield, quality
and uniformity!*

What Growers say about Burpee's BIG BOY GIANT HYBRID TOMATO

HALF A BUSHEL PER PLANT

Albert Campbell, Jr. of Bakersfield, Calif. wrote — "Your Burpee Hybrid tomatoes are spectacular. So far from my records I have picked a half a bushel per plant of some of the most luscious, red ripe, meaty tomatoes that can be found. Moreover the height of the tomato season isn't here yet (June 28th). I expect a big year of profits. Any Burpee Hybrid, whether it's corn, tomatoes, cucumber or any other vegetable, is tops with me...."

60,000 No. 1 PLANTS FROM POUND

Marbury B. Clark of Harmans, Maryland wrote — "The results from your Hybrid Tomato, Burpee's Big Boy, were highly satisfactory in this area.

The germination last spring was very good, in fact approximately 60,000 No. 1 plants were obtained from a pound of seed. The Big Boy is a very vigorous grower giving good protection against sun scalding and producing more crack-free, exceedingly large tomatoes than any other variety to date.

The harvesting period is much longer than average, due to good size of the tomatoes produced on the end of the vine. It was also noticed that the finally abandoned Big Boy fields were escaping late blight that wiped out later plantings of other varieties...."

Since 1949 when it was introduced, Burpee's Big Boy Giant Hybrid Tomato has become a real favorite of growers because of its high yield and ready saleability in the market. A true first generation (F₁) hybrid, it matures

in 78 days and is at its peak of production in mid-season when many standard varieties decline in yield and size of fruit. Big Boy Tomatoes are perfectly smooth, grow deep globe to deep oblate in shape. They are very firm and extra large, averaging 10 ounces in weight, with many weighing a pound or more. They have scarlet-red skin, thick walls, bright red, meaty flesh, and a fine flavor of excellent quality. Plants are large, extremely vigorous and heavy producers.

1/8 oz. \$7.00; 1/4 oz. \$12.00; 1/2 oz. \$22.00; 1 oz. \$42.00

W. ATLEE BURPEE CO., PHILADELPHIA 32, PA., - CLINTON, IOWA, - RIVERSIDE, CALIF.



Big Boy Tomatoes Ready for Market at George Jenkins' Farm, Pasadena, Maryland

BURPEE HYBRID

R AND BETTER CROPS

New for 1955! Burpee's **BIG EARLY HYBRID** *Two Weeks Earlier Than Big Boy*

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DE, CALIF.

This newest member of the family of Burpee Hybrid Tomatoes provides the grower with an early hybrid with fruits of main crop size. Burpee's Big Early Hybrid Tomato is a first generation (F₁) hybrid which matures in 62 days, 16 days earlier than Burpee's Big Boy. Fruits average more than 7.6 ounces for the entire season with some fruits up to 1 lb. The fruits are oblate to globular, very smooth, ripening to a bright scarlet right up to the stem. The walls are thick and the bright deep red interior is meaty and of excellent flavor. It is an outstanding firm slicer. Plants have great hybrid vigor and the heavy foliage gives good protection against sun scald. Seed supply limited.

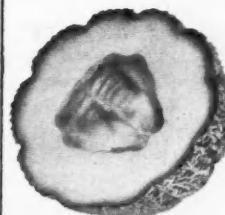
1/8 oz. \$6.00; 1/4 oz. \$10.00; 1/2 oz. \$18.00; 1 oz. \$35.00



Burpee's Big Early Hybrid provides early fruits of main crop size



ALSO NEW FOR 1955 BURPEE HYBRID CANTALOUP



82 days. Orange flesh. Heavily netted fruits, distinctly ribbed, round to slightly oval, 3 to 3 1/2 lbs. each. Thick, firm, juicy and most delicious. Vigorous vines produce good early yields. Seed supply very limited.
1/4 oz. \$2.25

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Use coupon below today to
get Burpee's 1955 Blue List,
the restricted book of special
low prices for market
growers and florists.

To: W. Atlee Burpee Co. Philadelphia 32, Pa.
Clinton, Iowa
Riverside, Calif.

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Please send me your 1955 Blue List Catalog.

Enclosed is check or money order for \$ _____

for which please send me:

ozs. Big Boy Giant Hybrid Tomato

ozs. Burpee's Big Early Hybrid Tomato

ozs. Burpee Hybrid Cantaloupe

NAME _____

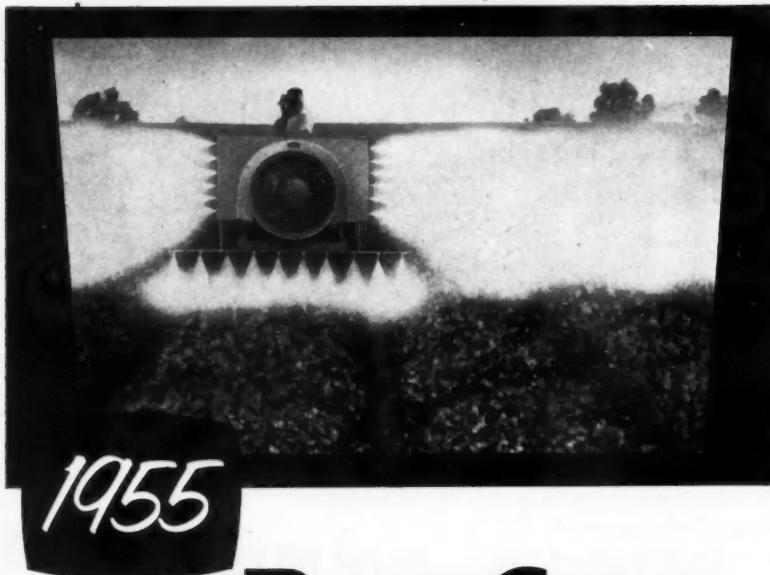
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Covers 80 ft. Width IN ONE PASS



Row Crop BES-BLO

Bigger yields, better pest control...

the modern, time-saving, economical way to spray row crops. Quickly attached to your present sprayer.

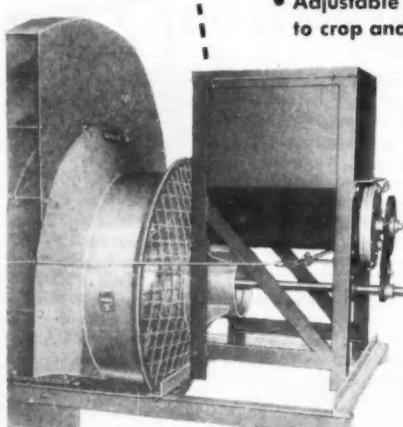
- Adjustable deflectors adjust spray pattern to crop and weather conditions.

- "Driving air" assures penetration and uniform coverage in widths up to 80 ft.

- Easily maneuvered, even on roughest ground.

3 SIZES
ONE TO FIT
YOUR NEEDS

◀ 200 lb. Duster
Hopper (optional)



Ask your dealer for a demonstration or write for information.

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American VEGETABLE GROWER

REG. U. S. PAT. OFF.

(Commercial Vegetable Grower)

Vol. 3 February 1955 No. 2

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AMERICAN VEGETABLE GROWER

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AMERICAN VEGETABLE GROWER

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To: GROWERS

From: AMERICAN CYANAMID COMPANY

Here are the facts on the only insecticide that offers all the following advantages:

- Malathion is the only organic phosphate insecticide which offers you a wide margin of safety in handling as well as superior insect control.
- Malathion kills aphids and mites as well as scores of other sucking and chewing insects on more than 30 crops.
- Malathion is compatible with most other spray materials.
- Malathion residues on crops disappear rapidly.
- Malathion is available in wettable powder, emulsifiable liquid and dust forms.

In just a few short years, malathion insecticides have built an outstanding record of successful use throughout the country. Find out how they can help you achieve easier, more efficient insect control.

Malathion insecticides are available from well-known manufacturers, under their own trade names.



WRITE TODAY FOR MALATHION GROWER'S GUIDE. This free booklet contains valuable general information on malathion, also dosage tables. Consult your county agent or other local agricultural authority for suggestions about application procedures and timing of sprays.



AMERICAN Cyanamid COMPANY

AGRICULTURAL CHEMICALS DIVISION
30 Rockefeller Plaza, New York 20, N. Y.

DEVELOPERS AND PRODUCERS OF
MALATHION AND PARATHION TECHNICAL

P.S. Malathion kills flies, too!

CASE
"VAC-14"



Fast and Handy For Many Jobs on Truck Farms

Need a tractor as quick and handy for "choring" as it is in the field? A tractor that's low and easy to get on and off, yet has full clearance for row crops. A tractor that's easy on fuel for light work, yet has full 2-plow power for heavy plowing and tillage jobs.

Just step onto the low, roomy platform of the Case "VAC-14" All-Purpose Tractor. Settle into its comfortable Bodyguard® seat. Enjoy close-to-the-ground operation, yet have full clearance for cultivating, side-dressing or spraying. Stay in the seat to hook up rear-mounted plows, harrows, planters, cultivators, or other Eagle Hitch implements. Enjoy the ease of Constant Hydraulic Control of mounted or trailing machines.

Ask your Case dealer for a demonstration. Write for folders on the "VAC-14" and implements you need. J. I. Case Co., Dept. B-215, Racine, Wis.



Handy for tall, bushy or bedded crops. Case high-clearance tractors have speedy Eagle Hitch for easy rear mounting of sprayers, dusters, planters, cultivators and other implements . . . Constant Hydraulic Control to adjust implement height to the job or crop . . . power take-off centrally located just above the tractor drawbar for convenience, to save power and protect universal joints.

LETTERS TO THE EDITOR

Attend Those Meetings!

Dear Editor:

Your article on attending annual meetings of growers' associations is surely correct. I have invariably found it profitable to attend.

For instance, I tried to raise cauliflower for seven years, and almost every year I discarded about 75 per cent of my crop because of button heads, brown heads, spotted heads, etc. I tried different fertilizers, liming, sprays, etc., with no success. I knew that my soil and subsoil were all right, even the lay of the land, which sloped gently to the northeast.

When the VGAA had their annual meeting in New York (I think it was 1938), I attended, and hanging on a wall was a photo of a field of cauliflower, one-half of which cut 12 per cent No. 1 heads, while the other half cut 95 per cent No. 1 heads.

What caused the difference? Thirty pounds of borax to the acre. Two years later I cut and sold \$1,250 worth of cauliflower to the acre, and I have been growing good cauliflower ever since.

I have attended other meetings and feel that it is the best paying job of the whole season.

Farmington, Mo.

E. Longenecker

Youth Will Be Served

Dear Editor:

I would like to mention a few bulletins and material that will prove helpful to the 4-H, Future Farmers of America, and National Junior Vegetable Growers Association boys and girls, especially those who attended the National Junior Vegetable Growers Association convention which finished at Cincinnati, Ohio, on December 9.

First of all, for insects, the 1952 Yearbook of Agriculture, and for diseases, the 1953 Yearbook of Agriculture, can be obtained for you by your representative or congressman at no charge, or may be found in your library. They can also be obtained by sending \$2.50 to the Superintendent of Documents, Washington 25, D.C. I have found these books very helpful in 4-H work since they contain some fine color plates.

Other interesting and useful booklets are: The Yearbook of Agriculture for 1954, on marketing; Circular 671, "How to Know Your Common Vegetable Insects," University of Illinois, Urbana, Ill.; Circular 718, "Weeds of the North Central States," 75 cents, from University of Illinois, Urbana, Ill.; "Vegetable Judging, Grading, and Identification Information," "Illinois Vegetable Guide," and "For the Young Gardener," all available from Dr. Norman Oebker, Urbana, Ill.

Additional useful publications are: "Your Crops," with news of the latest seed developments, Associated Seed Growers, New Haven 2, Conn.; "News and Views," very good for tomatoes and carrots, Agricultural Department, Campbell Soup Co., 100 Market St., Camden 1, N.J.; "School Garden-gram," used in many cities carrying garden projects, issued monthly by the National Garden Institute, R.F.D. No. 3, Zanesville, Ohio.

One issue of AMERICAN VEGETABLE GROWER may save you a lot of money by its timely advice. And don't forget your farm advisor's bulletins. You can learn a lot by reading just how the other fellow did it, right or wrong, and that is what counts.

Mundelein, Ill. William R. Laechelt

AMERICAN VEGETABLE GROWER

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R. Laechelt

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CALENDAR OF COMING MEETINGS AND EXHIBITS

Jan. 31-Feb. 1—Annual conference canners, fieldmen, and growers of vegetable crops for processing, Ohio Union, Ohio State University.—E. C. Wittmeyer, Ext. Hort., Columbus 10.

Jan. 31-Feb. 3—United Fresh Fruit and Vegetable Association annual meeting, Hotel Commodore, New York City.—Association headquarters—777 14th St., N. W., Washington 5, D. C.

Feb. 3-4—Farm & Home Week Potato & Vegetable Growers meeting, University of Wisconsin, Madison.

Feb. 7-9—Ohio Vegetable and Potato Growers Association 40th annual convention, Neil House, Columbus.—E. C. Wittmeyer, Sec'y, Columbus.

Feb. 7-11—Michigan State College annual Farmers Week, East Lansing.

Wisconsin potato growers' sectional meetings: Feb. 8—Northwest area, Spooner; Feb. 9—Oneida-Vilas County area, Rhinelander; Feb. 10—North Central area, Antigo; Feb. 11—Central area, Stevens Point; Feb. 15—Southeastern area, Milwaukee County Agent's Office, Milwaukee; John A. Schoenemann, Ext. Spec., U. of Wis., Madison 6.

Feb. 9-11—Ohio State Horticultural Society 108th annual meeting, Neil House, Columbus.—C. W. Ellwood, Sec'y, Wooster.

Feb. 10-11—Idaho State Horticultural Society 60th annual meeting, Boise. Anton J. Horn, Sec'y, Boise.

Feb. 14-16—Pennsylvania State Horticultural Association annual meeting, in joint session with National Peach Council, York, Pa.—John U. Ruef, Sec'y, PSHA, State College, Pa.

Feb. 22-24—Technical School for Pickle and Kraut Manufacturers, Kellogg Center, Michigan State College, East Lansing.—S. K. Ries, Dept. of Hort., East Lansing.

Feb. 23—Lake Shore Vegetable Growers meeting, Milwaukee County Agent's Office, Milwaukee, Wis.—John A. Schoenemann, Ext. Spec., U. of Wis., Madison 6.

Feb. 24—Racine, Kenosha County Vegetable Growers meeting, Wisconsin Gas & Electric Company auditorium, Racine—John A. Schoenemann, Ext. Spec., U. of Wis., Madison 6.

Iowa Fruit and Vegetable Schools: Feb. 24—Davenport; Feb. 25—Fort Madison; Mar. 9-10—Council Bluffs.—Glenn Raines, Sec'y, IFGA, State House, Des Moines.

Mar. 21-22—Kern County Potato Growers Association 11th annual convention, Bakersfield Inn, Bakersfield, Calif.—Francis P. Pusateri, Exec. Sec'y, Bakersfield.

Aug. 16-20—Centennial of Farm Mechanization, Michigan State College, East Lansing.—A. W. Farrell, Head Agr'l Engng. Dept., MSC, East Lansing.

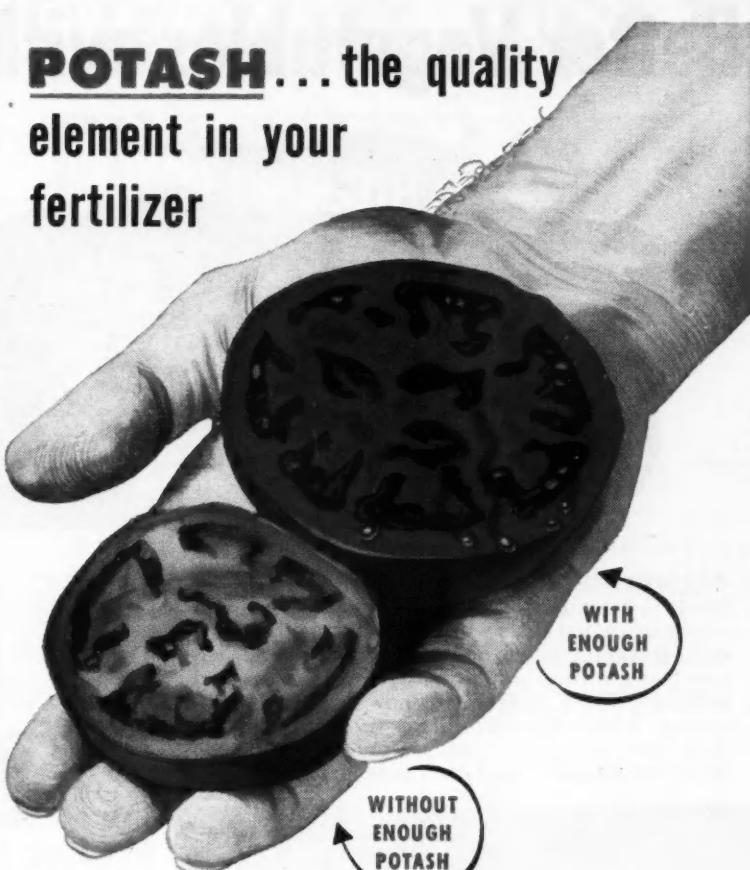
Oct. 4-6—Florida Fruit & Vegetable Association annual convention, Hotel Fontainebleau, Miami Beach.—Geo. Talbott, 29 S. Covit St., Orlando.



Now at long last you can have that greenhouse you've been wanting. For \$250 you can build an 18x84-foot plastic greenhouse which would cost you \$4,000 if constructed of glass. Send 25 cents in coin or stamps to AMERICAN VEGETABLE GROWER, Willoughby, Ohio, for working drawings prepared by the University of Kentucky, together with descriptive leaflet.

FEBRUARY, 1955

POTASH...the quality element in your fertilizer



side by side tests:

Prove it pays to go heavy on potash

It's amazing what the right amount of Potash can do for your vegetable yields. Potash-fed vegetables—tomatoes, beets, onions, cabbages, etc.—are firmer, meatier, choicer. The kind of crops that keep better, ship better and bring a better price at market. To insure the vigor and health of your next crop, make sure your fertilizer contains enough Potash. Consult your agricultural adviser for correct amounts. But remember, a low Potash level means a low income level.

SEND FOR THIS FREE BOOKLET

It shows in full color potash deficiency symptoms in field, vegetable and fruit crops. For your free copy write to address below.



Symbol for yield...quality...profit

**AMERICAN POTASH
INSTITUTE, INC.**

Dept. V-39, 1102 Sixteenth Street, N. W., Washington 6, D. C.

MEMBER COMPANIES: American Potash & Chemical Corporation • Duval Sulphur & Potash Company • Potash Company of America • Southwest Potash Corporation • United States Potash Company

Better Vegetables with Less Work



Any way you apply it, ARCADIAN UREA 45, the 45% Urea Nitrogen Fertilizer saves work and cuts application costs while it boosts yields profitably. It speeds the job of applying nitrogen needed for fast-growing, high-quality vegetables and potatoes. Place your order now for this work-saving, adaptable new nitrogen. Write us and we'll send you free literature and tell you who sells ARCADIAN UREA 45 in your vicinity.



Top-dress cover crops, vegetable stubble and sod before you plow—with fast-spreading, smooth-flowing UREA 45. Every easy-lifting 80-pound bag contains 36 pounds of nitrogen—two or three times as much as ordinary nitrogen fertilizer. You have fewer bags to lift to get all the nitrogen needed to rot crop residues into nitrogen-rich humus, and to feed your hungry crops throughout the season.



Side-dress with UREA 45 when your crops need an extra nitrogen boost. ARCADIAN UREA 45 feeds crops quickly, even in cool soil, yet lasts throughout the growing period. With short-season vegetables, any UREA 45 left over stays in the soil to rot crop residues fast and to feed the next crop planted. UREA 45 spreads readily in any fertilizer equipment.



Apply UREA 45 in irrigation water. Let water do the work of spreading and do two jobs in one. Irrigation water carries UREA 45 everywhere it penetrates, to feed all crop roots equally well. There is no waste—UREA 45 stays locked to the soil until crops need it. UREA 45 feeds all the crop roots in furrow, bed and underground pipe irrigation, as well as in flood and sprinkler systems.



PRODUCTS FOR PROFITABLE FARMING

Urea 45 Fertilizer—45% Nitrogen Pellets

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LET YOUR SOIL TELL YOU ITS NEEDS

An authority on soils presents a four-point program to help you eliminate the guesswork from your fertilization practice and increase production . . .

By BENJAMIN WOLF

Dr. Wolf's Agricultural Laboratories
Bridgeton, N.J.

RAPID soil testing can be a powerful aid to profitable vegetable production. By eliminating the guesswork as to need for fertilizer, it can jump yield. With proper soil testing as a guide, no crop need ever go hungry. At the same time, by its very nature, soil testing acts as a brake on excessive use of fertilizer. The net result is a low unit cost of fertilizer.

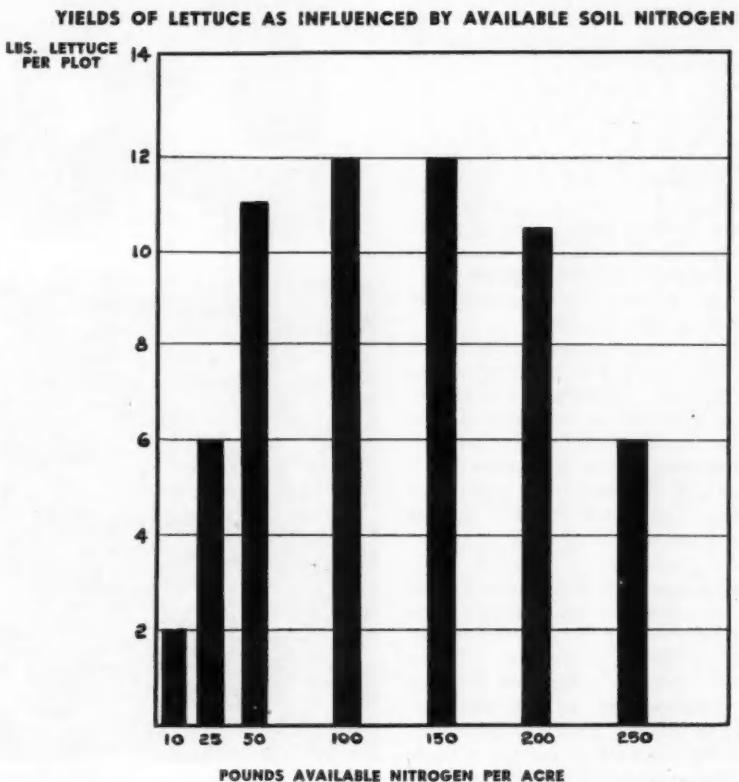
As beneficial as soil testing can be, much of it fails to give full value. To obtain maximum value from soil testing, it is important that the following factors be considered.

1) *Soil sample should be representative of area in question and tests must be accurate.* Considerable directions on sampling have been given by various agencies involved and need not be repeated here. A word of caution may be worthwhile. Growers should follow directions carefully and use common sense in obtaining samples and also in sending them. Today there are a number of accurate methods for determining nutrients in soils. Generally, the results obtained with one method are not comparable with another in terms of amounts found but should come close in relative rating.

There are a number of home kits which work fairly well if you are a good chemist. For most growers, more accurate results will be obtained by using tests from a reliable laboratory rather than depending upon solutions of unknown strength and purity.

2) *A complete soil test.* Good soil fertility, besides certain biological and physical factors, consists of many chemical factors such as pH (acidity or alkalinity), organic matter, available nitrogen, phosphorus, potassium,

- 1 Obtain accurate tests of representative soil samples
- 2 Make sure the soil test is complete
- 3 Apply fertilizer to maintain established nutrient levels
- 4 Determine soil nutrient level by periodic soil tests



calcium, magnesium, boron, manganese, iron, zinc, copper, and molybdenum. To test for only one or a few of these gives an incomplete picture. Yet, many growers feel they are getting a soil test when they get pH only. The pH is important, but then so are the other factors.

Many tests fail to give available nitrogen, yet nitrogen is the fertilizer element used in greatest abundance

by many plants. The contention is that nitrogen changes too rapidly to mean anything. Nothing could be farther from the truth. Because nitrogen does change quickly we need an accurate picture and this is possible by periodic testing, which will be discussed later.

Soil tests for some of the minor elements such as zinc and molybdenum
(Continued on page 26)

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GIVE YOUR SEEDS A CHANCE

Preplanting treatment is one means of protecting seeds against disease and insuring healthy growth

By J. D. WILSON, *Ohio Agricultural Experiment Station*

THE majority of the diseases of vegetables may be controlled by one means or another. Seed treatment is one of a half dozen methods that include the use of disease-free seed, the selection of disease-resistant varieties, crop rotation, sanitation (including the elimination of weed hosts and insect vectors), soil sterilization, and the use of fungicides and other chemical compounds to check infection and disease.

In spite of all these weapons available to the grower, there are still some vegetable diseases that can be controlled only with difficulty, if at all. Among these are clubroot of crucifers, many of the wilts and root rots of peas, various tuber rots of potatoes, the *Verticillium* and *Fusarium* wilts of many vegetables, onion pink-root, and black-root of beets, and most of the virus diseases.

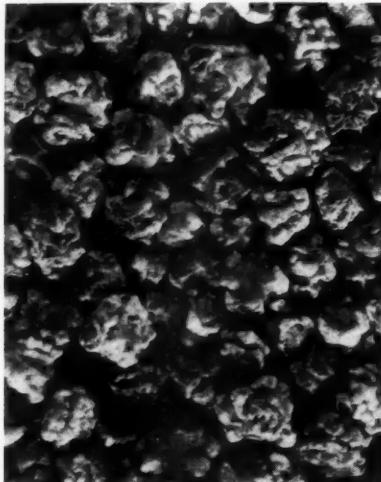
Seed treatment is often effective in lessening disease loss in the growing of vegetables. If disease-causing organisms that are in, on, or near the seed can be eliminated before or just after planting, more and better seedlings can be obtained from a given lot of seed. The more properly placed plants then should produce a larger yield.

Treatments are commonly divided into two groups, disinfectants and protectants. Disinfectants eliminate disease-causing organisms latent within the seed or present on the seed coat, whereas protectants act primarily to protect the seed from soil-inhabiting diseases during the process of germination and emergence. Many of the latter group also act to some extent as disinfectants. In most instances seeds treated with disinfectants are inherently subject to attack by soil-inhabiting diseases, or are made more so by treatment. Thus, they also need a protectant treatment before they are planted. However, treatments of this kind are sometimes injurious to the germinating seeds and care must be taken in their use.

A large number of protectant formulations have appeared on the



Boswell
Onion seeds (greatly enlarged)



Boswell
Beet seeds (greatly enlarged)

used to provide the grower with disease-free or disease-resistant seed.

The disinfectant type of treatment, which includes hot water, corrosive sublimate, mercurous chloride, formaldehyde used in specific ways, New Improved Cereson, etc., is used to treat vegetable seeds for such diseases as black-leg and black-rot of the crucifers, the early, late and bacterial blights of celery, bacterial spot of pepper, angular leaf-spot and anthracnose of cucumber, as well as certain types of damping-off.

The hot-water treatment must be used with care, especially on old seed, or germination may be impaired. Temperatures most commonly used vary between 48° and 50° C. (118° to 122° F.) and the treatment interval is usually somewhere between 10 and 30 minutes, depending on the seed being treated and the disease to be controlled. Various precautions must also be used in treating seed with corrosive sublimate (mercuric chloride). This chemical actively attacks most metals and must be kept in a wooden, ceramic, or enamelware container.

It is usually prepared in 1-1000 dilution in water (1 ounce in 7.5 gallons) and the immersion (treatment)

market during the past few years, whereas there are still, and probably always will be, comparatively few disinfectant treatments. With the present trend toward the pre-treatment of seed in bulk by the seed houses before they are distributed or sold, there has been a gradual decline in the use of protectant seed treatments by the grower, and the use of the disinfectant type has been declining as more and more care is being

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Vegetables

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Beet
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Broccoli
(See Cabbage)

Cauliflow
(See Cabbage)

Cucumber

Eggplant

Lettuce
Muskmelon
(See Cucumber)

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period varies from 2 minutes for pepper seed to 20 minutes for crucifers, and on up to 90 minutes for potato seed pieces. The temperature of the solution during seed treatment should be about 15° to 22° C. (60° to 70° F.), which is about room temperature. All seed but that of crucifers and potatoes should be washed thoroughly and dried quickly. The material ($HgCl_2$) is very poisonous and should be kept from children and animals.

Calomel and mercuric oxide (yellow) are now used comparatively little as seed treatments, although the latter is used to some extent as a treatment for potatoes. Semesan Bel (an organic mercury formulation) is also used on potatoes to some extent, as is formaldehyde. However, the treatment of potatoes for control is recommended only infrequently. New Improved Ceresan (another organic mercury) is sometimes used for the treatment of tomato seed to check damping-off, bacterial spot, *Phoma* rot, *Alternaria* stem canker, etc.

Seed protectants now make up an increasingly large group of materials. As mentioned previously, they are used as a coating over the exterior of the seed to protect it, and the germinating seedling, from those forms of decay and damping-off that attack the young plant as it emerges



Pepper seeds (greatly enlarged)

from the soil and for a variable period of time thereafter. Chief among these soil-borne diseases is damping-off, a disease that kills the seedling at any time from the start of germination until the stem has developed a considerable amount of woody tissue. The disease may be divided for convenience into pre-emergence and post-emergence damping-off. Seed protectants are primarily used against the pre-emergence form and soil

drenches are utilized to check the post-emergence forms.

Although seed protectants are most commonly used to control damping-off, they are also employed to protect various species of vegetable plants against other diseases. For instance, Arasan applied in the form of a heavy coating on onion seed (the technique is known as pelleting) has been recommended for the control of smut, and this and other compounds such as Spergon and Orthocide 75 may be used to give some degree of control of root rot of peas, angular leaf-spot and anthracnose of cucumber, Rhizotonia on spinach, etc.

Several vegetables respond hardly at all, or only slightly, to seed treatment with any kind of disinfectant or protectant, especially when the seeds are to be planted directly in the field or garden. However, if seedlings are to be grown in a cold frame, hotbed, or greenhouse for later transplanting, then seed and/or soil treatment to prevent damping-off becomes more important.

The vegetables that respond most to seed treatment in Ohio are beet, spinach, pea, sweet corn, and lima bean. The response is greatest when the seeds are planted early in the spring in cold, wet soil, and usually becomes progressively less as the

(Continued on page 25)

Partial Listing of Diseases of Vegetables That May Be Reduced in Severity by Seed Treatment and Recommend Treatments for Whatever Control is Possible.

Vegetable	Disease	Need ¹ for treatment	Type of Treatment ²		Vegetable	Disease	Need ¹ for treatment	Type of Treatment ²	
			Disinfectants	Protectants ³				Disinfectants	Protectants ³
Bean (Lima)	Damping-off ⁴	V		Spergon, Arasan, Orthocide 75, etc.	Parsnip	Damping-off	V		Spergon, Arasan, Etc.
Beet (Garden)	Damping-off	V		Arasan, Orthocide 75, Cuprocide	Pea	Damping-off	V		Spergon, Arasan, Orthocide 75, Phygon
	Root rot	M	Hot water 140°—10 minutes		Rootrots (various)		V		Various treatments give some control.
			New Improved Ceresan	+ Arasan	Pepper	Damping-off	V	Corrosive Sublimate 1-3000 5 minutes.	Arasan, Spergon, Etc.
Broccoli (See Cabbage)	Damping-off				Potato (white) ⁶	Rhizotonia	S	Corrosive Sublimate 90 min.	
Cabbage	Damping-off and wire stem	M		Arasan, Spergon, Etc.			S	Semesan Bel (dip)	Plant without washing.
	Black-leg	S	Hot water 122°—30 minutes	+ Arasan, Spergon, Etc.			M	Corrosive Sublimate 90 min.	
	Black-rot	S	" "	" "	Scab		S	Semesan Bel (dip)	Plant without washing.
Cauliflower (See Cabbage)	Damping-off	V		Arasan, Spergon, Etc.	Potato (Sweet)	Black-rot	M	Corrosive Sublimate 10 min.	
Celery	Alternaria (early blight)	S	Hot water 118°—30 minutes	+ Arasan			S	Semesan Bel (dip)	Plant without washing.
	Septoria (late blight)	S	" "	" "	Radish	Damping-off	S		Arasan, Spergon, Orthocide 75, Etc.
Cucumber	Damping-off	M		Arasan, Spergon, Etc.	Spinach	Damping-off	V		Arasan, Phygon, Zinc oxide.
	Angular leaf spot	S	Corrosive Sublimate ⁵ 5-10 min.	+ Spergon or Arasan	Sweet corn	Damping-off	V		Orthocide 75; Spergon, Arasan, Etc.
Eggplant	Anthracnose	S	" "	" 15 "	Seed & root rots		V		Protectants of some value in control.
	Damping-off	V			Tomato	Damping-off	V	New Improved Ceresan dust	Arasan, Spergon, Etc.
	Phomopsis blight	S	Hot water 122°—20 minutes	+ Arasan, Etc.		Bacterial spot	S	" "	
	Verticillium wilt	S	" "	" "	Stem Canker	M	Hot water 122°—25 minutes	+ Arasan	
Lettuce	Damping-off	M		Arasan, Spergon	Rhizotonia	S	" 125°—30 "	+ N.I. Ceresan dust.	
Muskmelon (See Cucumber)					Bacterial canker	S			Acetic acid, also fermentation soak.
Onion	Damping-off	M		Arasan, Spergon, Orthocide 75	Turnip	Damping-off	M		Arasan, Spergon, Etc.
	Smut	V		Arasan or Orthocide 75 in pelleting treatment.	Watermelon (See Cucumber)				

1. Judged on the basis of the likelihood that the disease will be encountered and that there will be a response to treatment. V = Very Strong; M = Average Chance, S = Slight.

2. The distinction between disinfectants and their ability to rid seeds of diseases born in the soil and the overlapping action of protectants is often slight. Also, protectants are frequently needed as secondary treatments to protect the germinating seedling from soil-inhabiting organisms.

3. Treatments listed are not necessarily the only ones available that might be used, but are those that are dependable for the crop and disease indicated. This is also true for the disinfectants listed. Most of the protectants used as dust treatments are applied at the rate of 0.25 per cent by weight of the seed—otherwise they should be at the manufacturers' recommendations. Copper should not be

used on crucifers. Spergon is comparatively poor for use on beets and spinach, but excellent on beans and peas. Arasan does well on a wide variety of vegetable seeds, as does Semesan.

4. Damping-off is commonly caused by species of *Pythium*, *Rhizotonia*, *Fusarium*, *Phytophthora*, and sometimes *Phoma*. Soil drenches frequently provide or accomplish damping-off, and they are usually checked by the same compounds.

5. All seeds except potato that are treated with corrosive sublimate should be thoroughly washed and dried following treatment. Caution: the material attacks metal and is poisonous.

6. The treatment of potato seed pieces to control diseases is not commonly recommended in most states at present. Follow advice of your agricultural experiment station.

THE VEGETABLE AREAS OF



By GEORGE TALBOTT

Florida Fruit & Vegetable Association

This is the second of a series on great vegetable regions in the United States. The first article covered New Jersey. Other regions will be featured from time to time.—Ed.

Florida's leading vegetable crop, tomatoes, is field-washed on W. L. Rice farm near Ft. Pierce.

Mobile celery harvesters have revolutionized the Florida celery industry. The machine below harvests and packages celery in Belle Glade section.

FROM its characteristic pistol shape, Florida literally fires a kaleidoscope of colorful vegetables to consumers throughout the United States and Canada. In the late fall, winter and early spring approximately 134,000 carloads of vegetables, including watermelons, strawberries and cantaloupes, are shipped from the state.

The "Big Freeze" of 1894-95 caused chaos and financial ruin to many of the early citrus pioneers, but undoubtedly contributed to the development of the commercial vegetable industry. Many farmers who had all their resources in one large citrus basket were forced to find a quick money crop from lands formerly planted to citrus.

The truck sections of the state, which total about 421,000 acres, are concentrated areas but widely scattered throughout the peninsular section except for a minor volume of potatoes, watermelons and cucumbers in the West Florida area. Various classifications are used to denote these areas either by soil type, crop or location but the most common is area designation such as Lake, Pompano, Glades, Devil's Garden and many others since approximately 24 different areas are recognized as being a major factor in the vegetable deal.

At the present time, the predominant utilization of Florida vegetables is in the fresh form. There is only minor use made of the vegetables in



frozen or canned form. Due to Florida's geographical location and its nearness to heavily populated consuming centers, the vegetable producers in Florida supply most of the nation with an adequate supply of wholesome, healthy, fresh vegetables in the late fall, winter and early spring. In performing this service to the public, Florida farmers assume certain calculated risks which are not attendant to production in other areas of the United States. Such off-season operations cause higher production costs from increased applications of fertilizers, insecticides and fungicides. In addition, crop yields are lower, risk

factors greater and labor costs higher.

Florida is the nation's leading state in the production of late fall, winter and early spring vegetables. Some of the leading crops during the 1953-54 season are listed in the table on the facing page.

Peat and muck soils occur to a considerable extent in central and southern Florida. By far the most important of these is the Everglades, which is the largest continuous deposit of organic soils in the world, consisting of over 2 million acres. Other peat and muck deposits in Florida are found in the Lake Istokpoga area northwest of Lake Okeechobee, the



Florida's vegetable areas above. The second one of the large areas must combat a large amount of water to virgin soil erosion problems.

LE

Vegetable

1. Tomato
2. Snap beans
3. Potatoes
4. Cabbage
5. Sweet corn
6. Watermelons
7. Peppers
8. Cucumbers
9. Cabbages
10. Squash
11. Radishes
12. Escarole
13. Strawberries
14. Eggplants
15. Miso

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SEAS OF AMERICA

FLORIDA



Florida's vegetable industry is concentrated in the 24 areas shown above. The section along the Atlantic Coast (areas 19 through 23) is one of the largest winter vegetable areas in the country. Growers must combat an amazing variety of soil problems. In section 23 tomatoes are grown on rockland, in section 6 on sand. Peat and muck soils occur extensively in the central and southern sections, requiring drainage and water control. Tomato growers in areas 16 and 19 must move to virgin soil each season to escape weed, insect, nematode, and disease problems.

LEADING CROPS PRODUCED IN FLORIDA, 1953-54

Vegetable	Acres Harvested	FOB Gross Value Million
1. Tomatoes	57,200	\$ 37.7
2. Snap Beans	71,000	19.2
3. Potatoes	31,700	15.0
4. Celery	10,700	11.5
5. Sweet corn	39,300	10.2
6. Watermelons	98,000	9.6
7. Peppers	13,100	9.0
8. Cucumbers	17,800	8.3
9. Cabbage	15,500	4.0
10. Squash	9,800	2.4
11. Radishes	7,000	2.2
12. Escarole-Endive	4,400	2.0
13. Strawberries	3,000	1.9
14. Eggplant	2,400	1.5
15. Misc. Veggies.	40,225	8.5
TOTAL	421,125	\$143.0

Lake Apopka or Zellwood area northwest of Orlando, the Weirsdale-Ocklawaha area southeast of Ocala, the Oviedo area northeast of Orlando, the Lake Hart section southeast of Orlando, and the Sarasota area. These areas are the main sources of supply

for snap beans, celery and sweet corn, but large acreages are also planted to radishes, cabbage, leaf crops and many other vegetables.

Water control is the first requisite in bringing these muck and peat soils into actual use for crops. A scientifically engineered drainage, flood control, and water conservation program is necessary for the entire area as well as an adequate individual water control system on each farm. This system usually includes a pump installation, field ditches, and mole drains or tile through the fields. Because of the expensive installations needed for water control and the suitability of the land for mechanization, the tendency is for the development of farm operations from 160 to several thousand acres.

It was discovered by agricultural

research workers in 1927 that it was necessary to apply copper sulfate to the raw peat soils of the Everglades in order to make these soils productive. This has made it possible in recent years to grow tremendous acreages of vegetables in the Lake section in the vicinity of Lake Okeechobee. Manganese, zinc, and boron are also some of the other trace elements found to be deficient on these peat and muck soils under certain conditions.

Much of Florida's vegetable production, especially tomatoes, peppers, eggplant, cucumbers, squash, cabbage and potatoes is located on low-lying, flatwood, prairie, or hammock and slough types of sandy soils which possess both poor drainage and low fertility. Water control, including

(Continued on page 23)



Spraying staked tomatoes in Ruskin area, the only area growing staked tomatoes.



Fumigating a celery seedbed in the Zellwood area where celery is the leading crop. Wide strips of polyethylene are used to prevent the fumigant from dissipating.

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GROWER

JUNIOR GROWERS Complete Active Year

Valuable lessons in vegetable growing and marketing are learned early in life

By R. T. MEISTER

Editor

IMPORTANT lessons in vegetable growing and marketing are being learned by junior growers early in life through opportunities made possible by the National Junior Vegetable Growers Association. At their recent convention in Cincinnati awards were made to winners in many useful and practical contests.

For instance, 17-year-old Jack Armstrong, national production champion this year, learned about growing and marketing and the interrelationship between the two from his acre and a half project. He grew eight different varieties of tomatoes and 28 varieties of 15 other vegetables. He supplied one retail store for the entire growing season and even successfully advertised tomatoes for home canning in the local papers.

Total income from vegetables grossed Jack \$1,008. His costs were \$396, leaving a net profit of \$612. To this should be added \$288 in prize money from four fair exhibits and one award, making a total profit of \$900.

Jack worked hard on these crops. Frost took the early planted tomatoes,



Second-place winners in national NJVGA Demonstration contest were Mary Froeb (left), Charlotte, N.C., and Syd Whitener (right), Huntersville, N.C. Their topic, "Sweet Potatoes Are Tops." Center: Home demonstration agent Helen John Wright.



Retiring NJVGA president Roy Curtiss turns gavel over to newly elected president, Nadine Thompson.

Jack Armstrong, Springfield, Ill., is shown receiving top national award in Production and Marketing contest from Joseph Campbell of Olin Mathieson Chemical Company.



In the Judging, Grading, and Identification contest, the Indiana team won the coveted Snyder trophy, presented by Prof. Grant B. Snyder. Shown in photo at left are, from left: Coach Dale Schimbecker and winners Carl Root, Harold Jennings, and Bill Bryant, all of Kendallville.

and one of the worst droughts in Illinois history cut his yields. But he persevered and says the three important lessons he learned are: 1) The earlier the crop, the better the price; 2) give the customers a little more than they pay for; 3) smile.

One of the regional winners, 18-

year-old John Ruszkiewicz of Pine Island, N. Y., had four and three-quarters acres in his project. He paid \$647 for hired labor to produce onions, carrots, and lettuce, and received \$2,147. Total costs were \$1,440, leaving a net profit of \$707, or about \$149 per acre. He said, "The most impor-

tant practices to follow are those that will influence the price—having top quality vegetables and putting them into excellent packages, choosing the proper method of marketing, and living up to one's reputation."

Junior vegetable growers attended the convention in groups from 35 states, accompanied by state leaders, extension specialists, and county agents. The association was formed to promote an educational program for youth who have an interest in commercial vegetable growing.

Adult advisor of NJVGA is Prof. Grant Snyder, Head, Department of Olericulture, University of Massachusetts, Amherst. THE END

Lettuce in WISCONSIN head lettuce limelight included the Chickering supply. Bob is a prominent cousin. He is using mobile which he carries the top to insure top



Collegiate annual conv from left: Ruszkiewicz.

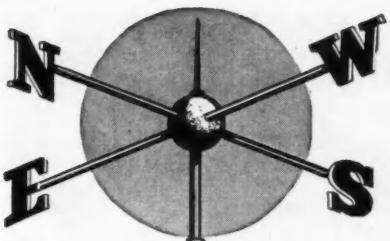
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Asparagus NEW JI gathered in for the 80 Jersey State shared the of the stat horticultur vegetable g and m

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NEWS

• Wisconsin's New Lettuce Industry in National Limelight

• Minnesota Tests Increase Onion Yields from 2 Tons to 11 Tons an Acre

Lettuce in Limelight

WISCONSIN — The infant Wisconsin head lettuce industry was in the national limelight last month when *Life* magazine included the lettuce operations of Bob Chickering in its report on the nation's food supply. Bob, operator of Endeavor Farms, is a prominent muck grower in central Wisconsin. He made the news with his Chickering mobile head lettuce harvester, with which he has cut harvesting costs from 2 cents to one-half cent a head. The machine carries the cutters, trimmers, and packers, and operations are carried on at night to insure top quality lettuce.



Collegiate Judging contest winner in NJVGA annual convention was Cornell University team, from left: Bruce Godfrey, Roy Curtiss, John Rusakiewicz.

The new vegetable variety list for the state's commercial growers has just been completed. Free copies are available from the Department of Horticulture, University of Wisconsin, Madison.—John A. Schoenemann, Ext. Spec., Madison.

Asparagus and Tomatoes Discussed

NEW JERSEY — Vegetable growers gathered in Atlantic City on December 6-8 for the 80th annual meeting of the New Jersey State Horticultural Society. They shared the meeting with the fruit growers of the state. This is one of the few state horticultural meetings where fruit and vegetable growers form the same organization and meet simultaneously.

Growers shared their experiences and were brought up-to-date on vegetable growing and marketing practices. Asparagus and tomatoes are two big crops in New Jersey, so they were the main topics of discussion. Dr. Frank App, Seabrook Farming Corporation's soils and crop specialist, described the soil-building and maintenance programs which he directs. He stressed the importance of soil and plant tissue analysis as a guide to wiser use of fertilizers.

Air conditioning of vegetable soils, especially for asparagus and tomatoes, was emphasized by Dr. Russell B. Alderfer, head of the agronomy department, Rutgers University. Plants cannot grow big without big root systems, and it takes a lot of air space in soils to provide for large root systems. Good tillage practices and

plenty of organic matter help to accomplish this.

Dr. Victor R. Boswell, of the USDA, in his discussion of asparagus varieties, said that there is the possibility that plant breeders may in the future develop varieties of asparagus that will produce all male plants since they are heavier yielding than female plants.

Karmex-W (formerly CMU) has been found to be one of the best chemical weed killers to use on asparagus fields. Dr. J. Howard Ellison, of Rutgers University, presented the results of a recent study which showed that the weed killer will have little if any effect on the flavor of spears.

Experiments on cultural practices in asparagus fields were reported by Dr. E. P. Brasher, head of the department of horticulture, University of Delaware. The best fertilizer program on asparagus, according to his studies, was a split application—half in early spring and the remainder after the cutting season. A 5-10-15 fertilizer gave significantly higher yields than did a 5-10-10. He also reported higher yields of asparagus from an application of 800 pounds per acre in the spring than from a 1,600-pound application.

Officers elected for the following year were: Thomas S. DeCou, Haddonfield, president; A. C. Thompson, vice-president; Ernest G. Christ, secretary, and Arthur J. Farley, treasurer, both of New Brunswick.

From 2 to 11 Tons Per Acre

MINNESOTA — Southern Minnesota Vegetable Growers, at their recent annual meeting, focused full attention on onion and potato growing. A. C. Rose, extension pathologist, reported on pelleting onion seeds with Tersan and heptachlor as a pest control measure. In tests which he conducted, such seed treatment increased yields from 1.9 tons per acre to 11 tons per acre. In a panel discussion, onion growers re-

ported that spraying early, thoroughly, and at frequent intervals with insecticides and fungicides is the secret to good onion production.

Dr. O. C. Turnquist, extension horticulturist, reported on potato and onion variety plots. Potatoes showing no scab included Redkote, Early Gem, Cherokee, Osage, and Yampa. High in yield were Cobbler, Redburst, and LaSoda. Red Pontiac was the potato with the lowest dry matter content—13.8 per cent.

Certificates of appreciation were presented to Henry Reynen and D. Reynen & Sons, of Hollandale, for co-operating with the University of Minnesota in staging demonstration plots for the last five years.—O. C. Turnquist, Sec'y, St. Paul.

Annual Meeting

OHIO — Growers on hand for the 40th annual meeting of the Ohio Vegetable and Potato Growers Association being held in Columbus February 7-9 will hear Dr. D. de Zeeuw, Dutch horticulturist, tell about the extensive greenhouse operations in Holland. Dr. de Zeeuw, is teaching this year at Purdue University.

Vegetable and potato promotion will be discussed by Kris Bernis, secretary of the potato division, United Fresh Fruit and Vegetable Association. J. Kenneth Samuels, of the USDA Farmers Co-operative Service, will speak on truck crop marketing, and William Case, executive director of the National Potato Council, will elaborate on potato marketing.

A new feature this year will be a special irrigation session led by L. L. Harrold, project supervisor of the USDA Soil and Water Conservation Research Branch at Coshocton, and Virgil Overholt, extension agricultural engineer at Ohio State University.

Fertilizers will get much attention. Lee Towson, Jr., of Seabrook Farms, N.J., will

(Continued on page 18)



Officers elected during annual meeting of NJVGA in Cincinnati, Ohio, are from left: Jack Armstrong, vice-president; Roy Curtiss, director; Mary Froebe, secretary; Nadine Thompson, president; Gwendolyn Fair, Delmar Chase, Dale Spiegelberg, directors.

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When fancy quality and big yields on an early market mean the high dollar, be sure the plant food you use is Vigoro Commercial Grower—the cream of Swift's full line of farm plant foods!

This complete plant food is specially formulated to supply maximum nutrient requirements of high-value crops. It helps provide the balanced feeding that brings you size, quality, and even flavor in the harvested crop that demands top-of-the-market prices.

Ask any grower who has used it. He'll tell you that Vigoro Commercial Grower stands alone in its ability to make every foot of soil yield the very best!

Protect your high investment . . . use the best plant food money can buy. This year, reach for highest-dollar returns with Vigoro Commercial Grower.

For full information, clip the coupon below and mail it today.

Vigoro Commercial Grower is Chemically-Hitched—ingredients are fused together by an exclusive process developed in Swift's research laboratory. This assures uniform feeding of your crop, helping to raise the yield-standard of your farm.

*Vigoro is the trademark for Swift & Company's complete, balanced plant food.



Please send me information on the use of Vigoro Commercial Grower.

AVG

Name _____

Street or RFD _____

Town _____

County _____

State _____

Commercial Crop(s) _____

Acreage _____

SWIFT & COMPANY, Plant Food Division • U.S. Yards, Chicago 9, Ill.

STATE NEWS

(Continued from page 17)

tell of the research work being done at the farms on cover crops and soil management. Dale T. Friday, of Allied Chemical & Dye Corp., will discuss new nitrogen fertilizers on the market.

Other out-of-state speakers on the program are E. J. Nicolay, president of Nicolay Dancy, Inc., and 1954 president of the National Potato Chip Institute; Dr. K. C. Berger, University of Wisconsin soil specialist, and Jack Willabee, of the Michigan Orchard Supply Company.—E. C. Wittmeyer, Sec'y, Columbus.

Marketing Specialist

INDIANA—Dr. Raymond Wilson, formerly of the marketing division of the California Department of Agriculture, joined Purdue University staff February 1. He will direct new work on a grower-retailer-consumer marketing program for Indiana agricultural products.

Hoosier growers who are interested in getting a new quarterly newsletter, "Red Peppers," should contact F. C. Gaylord, Department of Horticulture, Purdue University, Lafayette, Ind.—F. C. Gaylord, Sec'y, Lafayette.

Good Turnout

CONNECTICUT—A large trade exhibit was a feature of the 42nd annual convention of the Connecticut Vegetable Growers' Association which ended January 8. It was one of the most successful and best-attended conventions in years.

New officers elected were Leicester Aldo, Milford, president, and Gene Gaglairdine, Andover, vice-president. Re-elected were Christian Sonnichsen, Windsor, treasurer, and Frank W. Roberts, Middletown, secretary. President Aldo also came in for national honors when he was elected a director of the VGAA at its convention in Syracuse.—Frank W. Roberts, Sec'y, Middletown.

Farmer's Daughter

NEW YORK—A vegetable grower's daughter—16-year-old Shirley Downs, of Riverhead, Long Island, N.Y.—is the "Favorite Farmer's Daughter" of radio station WRCA in New York City.



Shirley was selected from 435 entrants from five states. The contest was launched after the station's farm editor declared, "Farm girls are healthier and more beautiful than city girls—they

make better wives, better cooks, and better housekeepers."

Shirley has driven trucks and tractors, picked potatoes, moved irrigation pipe, planted, tied, and cut cauliflower, and combined grain. She was awarded prizes worth over \$1,000.

Vegetable Marketing

NEW HAMPSHIRE—A program devoted entirely to marketing drew New Hampshire growers to Concord February 2 for the vegetable section of the annual meeting of the New Hampshire Horticultural Society.

Speakers included marketing specialists Dr. Lloyd H. Davis, Cornell University, and Lewis Norwood, New England Extension Service; J. W. O'Donnell, of Suffolk Farms Packing Co., Revere, Mass.; and growers Howard Putnam, of Claremont; Harry Proust, of Bowdoinham, Me., and Roger H. Lewis, of Andover, Mass. They told of their experiences in prepackaging and roadside marketing.—Perley D. Colby, Asst. County Agr. Agent, Milford.

AMERICAN VEGETABLE GROWER

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FEBRUARY,

Answering Your QUESTIONS

Don't let your questions go unanswered. Whether large or small, send them with a three-cent stamp for early reply to Questions Editor, AMERICAN VEGETABLE GROWER, Willoughby, Ohio.

VEGETABLE PLANT GROWERS

I would like the names of some plant growers from whom I can purchase early tomato, onion, and cabbage plants.—Pennsylvania.

To our reader goes a clipping from our July Directory issue with the listing of prominent vegetable plant growers. However, if his needs are limited, we are sure he can purchase the desired plants from local greenhouse growers in his area.

PLASTIC GREENHOUSE

I have found the article, "Build a Plastic Greenhouse," in your December issue, very interesting and almost unbelievable. Would it be possible for me to get the plans and more information on growing vegetables in this type house?—Ohio.

For University of Kentucky working drawings plus a descriptive leaflet, send 25 cents in coin to AMERICAN VEGETABLE GROWER, Willoughby, Ohio.

SEEDLESS WATERMELONS

What may be expected in the way of production from seedless watermelons?—Indiana.

Yield of marketable melons averages five to seven melons per plant for a 12-pound melon. Comparable yields from regular melons are two per plant.

CABBAGE COST

Can you give me some idea of the cost of producing cabbages?—California.

Figures compiled by San Bernardino County Farm Advisor G. A. Bowman show the following per acre costs: \$5.50 for hand preparation; \$34 for planting; \$32.56 for cutting labor and power; \$152.98 for fertilizer, plants, insecticides, and crates; \$57.60 for harvesting and packing; \$19.76 for overhead; \$37.50 for land, rent, or interest, for a total of \$339.90. On a 360-crate per acre yield this is 94 cents per crate.

SAMPLING TUBE

Where can I buy a soil sampling tube?—Virginia.

National Agricultural Supply Co., Fort Atkinson, Wis., lists three in their catalog, one at \$18.50, one at \$8.75, and one at \$2.85.

HYDRO-COOLERS

What companies manufacture hydro-coolers for cooling vegetables?—Massachusetts.

Durand Co., Woodbury, Ga.; Florida Division, Food Machinery and Chemical Corp., Lakeland, Fla.; and Flinchbaugh Co., York, Pa.

PINK TOMATOES

I would like to communicate with Louis Rauth, the grower described in Suter's article in the December issue on Florida tomatoes shipped in the pink. Can you give me his address?—Michigan.

Write Mr. Rauth at Rauth Farms, Route 1, Box 727B, Delray Beach, Fla.

PLASTICS, WEED CONTROL

What recent articles have you on chemical weed control and the use of plastics?—Massachusetts.

In the March, 1954, issue the article on page 8 entitled, "Kill Weeds Before You See Them," tells about new herbicides which prevent costly weeds from developing. For the use of plastics, an article appears on page 12 of the April, 1954, issue entitled, "New Ideas in Greenhouse Construction," and in the December, 1954, issue on page 5 the article, "Build a Plastic Greenhouse," tells about the use of polyethylene film in greenhouse construction.

FEBRUARY, 1955

FASTER, BETTER, MORE ECONOMICAL CROP PROTECTION

... yours with
John BEAN
AIR SPRAYERS



The new John Bean AirRow Sprayer Attachment in action. Note the large area covered and even spray distribution.

New John Bean *AirRow* Attachment

... converts your high pressure equipment for perfectly controlled, large-scale air spraying. Circular track rotation, combined with 180° vertical pivoting allows complete control of spray direction under all conditions. Straight-through air stream and new tapered air outlet provides maximum coverage, yet close-up plants are not damaged. Ask your John Bean dealer to demonstrate this great new AirRow and other models in the John Bean air sprayer line.



Get the details on these air-type units in the NEW 1955 catalog of John Bean Row Crop Sprayers. Write today!

John BEAN
Division of Food Machinery and Chemical Corporation
LANSING 4, MICHIGAN
SAN JOSE, CALIFORNIA

NEW

PROVED WEED KILLER

for cantaloupe growers

AMAZING

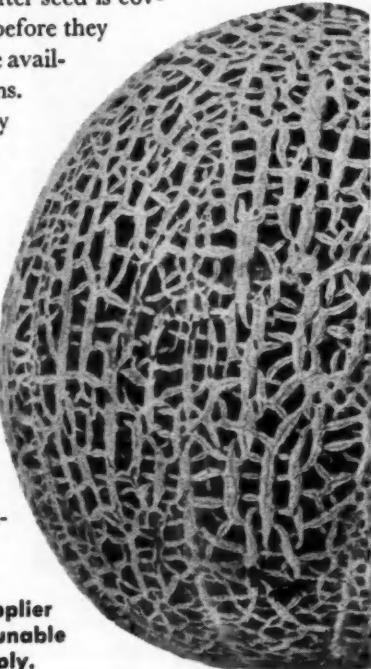
ALANAP-1

saves *35 to *150 per acre

Alanap-1, Naugatuck's new before-and-after weed killer that promises you great new savings by practically eliminating hand weeding. Spray Alanap-1 now (pre-emergence) after seed is covered, and annual weeds are killed before they can appear. Specific instructions are available for post-emergence applications.

Country-wide usage conclusively proves: (1) Alanap-1 can save growers of cantaloupes, watermelons and cucumbers from \$35 to \$150 per acre in weeding costs. (2) One pre-emergence application of Alanap-1 gives excellent control of a wide variety of weeds for 3-8 weeks—even after heavy rains. (3) Alanap-1 is safe on recommended crops, non-hazardous to humans and animals and is easy to apply. This season you can't afford to be without Alanap-1.

Order Alanap-1 from your local supplier today. Write, wire or phone us if unable to locate immediate source of supply.



Naugatuck Chemical

Division of United States Rubber Company
Naugatuck, Connecticut

producers of seed protectants, fungicides, miticides, insecticides, growth retardants, herbicides: Spergon, Phygon, Aramite, Synclor, MH, Alanap, Duraset.



Are You

OVERLIMING YOUR SOIL?

**Too much lime reduces production
so exercise caution when using it**

By ROBERT L. CAROLUS
Michigan State College

BEN FRANKLIN said it: "Liming makes grandfather rich and grandson poor." Franklin then proceeded to spell out the word "LIMED" with burnt limestone on a Pennsylvania hillside. The good Quaker farmers could see and were impressed with the great improvement in the stand, height, color, and vigor of the hay that grew within this "limed" area, and the practice of applying burnt marl on both cultivated and hay fields became widespread in early colonial times. Franklin's demonstration justified the first part of his proverb, but let's see how liming might affect the poor grandson.

Limestone applied to acid soils has somewhat the same effect as opening the draft on a stove. All the biological life in the soil is stimulated to much greater activity, organic matter is more rapidly broken down, larger quantities of plant nutrients are liberated by the organisms from the humus and the other soil materials, and this results in more luxuriant crop growth. By grandson's time, if no provision is made to replenish the organic matter and the larger quantities of plant nutrients that have been used up by the crops, the soil may well become less productive than before grandfather added lime.

We do need to maintain the proper lime level (pH value) in our soils to maintain a high biological activity; but we must remember that with high crop production both organic matter and plant nutrients must be replenished more frequently or abundantly to maintain the higher level of production. In the 150 years since Franklin's time much more has been learned about the value of lime in relation to vegetable production.

Soils lacking lime (below pH 5.0) are not only more inactive biologically and so do not liberate or fix as much nitrogen as soils of higher pH values, but generally contain less available phosphorus, a most important nutrient for plant growth. Merely by liming a strongly acid soil the available phosphorus found by "rapid soil tests" will be increased five to 10 times.

On strongly acid soils chemical elements such as manganese, iron, and

aluminum to be toxic changes the unavailable soils along become so symptoms greatly re-

Liming

There is most for all soils, range in the most on many exception high in soils produce not benefit low as 5.3 values of enough to of available or iron. For those of lime applied to the range

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“Liming is the best way to increase crop yields. It is a simple process that can be done with a few simple tools. The results are immediate and long-lasting. Liming helps to increase soil pH, which is essential for the growth of many crops. It also helps to improve soil structure and increase nutrient availability. Liming is a cost-effective way to improve soil health and increase crop yields. It is a practice that has been used for centuries and is still effective today.”

aluminum are frequently high enough to be toxic to many crops. Liming changes these elements to an almost unavailable form, and on overlimed soils along with boron they frequently become so unavailable that deficiency symptoms appear and yields are greatly reduced.

Liming for Vegetables

There is no precise pH range that is most favorable for vegetables on all soils. It has been found that a range in pH value from 6.0 to 6.5 is the most suitable acidity to maintain on many soils for most crops with the exception of potatoes. Soils that are high in organic matter and muck soils produce excellent crops that are not benefited by lime at pH value as low as 5.3. On these same soils, pH values of 7.0 to 7.2 are not high enough to cause troubles from a lack of availability of boron, manganese, or iron. However, on very sandy soils or those of low organic matter content, lime, when needed, should be applied to bring them closely within the range of pH 6.0 to 6.5.

Unlimed soils that have a pH value of above 7.0 are quite different from those that have been overlimed to pH 7.0 and seldom show deficiency symptoms from a lack in availability of a minor element. On soils with a natural pH value of 6.5, potato scab is seldom as much of a problem as it is on soils that have been limed to bring the pH value up to 5.5. Lime should be used very cautiously on soils that will be planted to potatoes because of the danger of increasing scab infection.

Sampling the Soil

To avoid overliming difficulties care should be used in sampling a soil and in calculating the quantity to add after the test has been made. Soils sampled in the spring when the winter rains have leached soil acids to lower levels will be higher in pH than in mid-summer when evaporation and fertilizer additions result in a maximum acidity content in the surface soil. On light sandy soils differences in the pH value from the same field have frequently varied as much as one pH unit between tests taken in late summer and the following spring. Consequently, soils sampled in the spring can be limed at a little heavier rate than those sampled in the early fall.

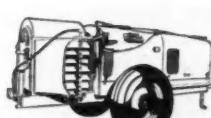
In sampling, thin slices should be taken with a garden trowel to plow depth at six to 12 scattered locations in a field. Each field should be sampled separately. Your county agricultural agent will have your soil tested for you or tell you where you can have an accurate test made. Soil

(Continued on page 22)

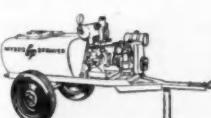
“With my Myers Concentrate Sprayer, I handle jobs a boom rig can’t touch,”



says VERNON NICHOLSON,
Custom Spraying
Aura, New Jersey



Myers Concentrate
Field Crop
Sprayer



Myers GP
General Purpose
Sprayer

When potato vines and foliage get heavy, many New Jersey growers (some own boom rigs) hire Vernon Nicholson to get the vital, all-over, close-to-the-ground spray coverage so necessary late in the growing season. With plenty of air, delivered at 90 mph velocity, his Myers Concentrate Sprayer assures excellent coverage *without plant damage*.

Growers all over the country like the Myers Concentrate, because it applies its effective cover spray quickly (eight acres per hour). This means insects or diseases can be controlled before crops are seriously damaged.

The Myers Concentrate Sprayer is gaining popularity among growers for other reasons, too. It requires fewer field tracks than a boom rig, so more rows can be planted resulting in a higher yield per acre. It uses just one-fourth the water dilute equipment needs and is easy for one man to handle.

Investigate all the profit-making advantages of concentrate spraying the Myers way. Your nearby Myers dealer will gladly demonstrate the Concentrate Sprayer at your convenience. Call him today.

Myers

SPRAYERS
WATER SYSTEMS AND WATER SOFTENERS



The F. E. Myers & Bro. Co., Dept. AV-2
Ashland, Ohio

The
"Stainless-Steel Streamliner"
The World's Most Modern Concentrate Sprayer



Total Weight
Less Than One Ton

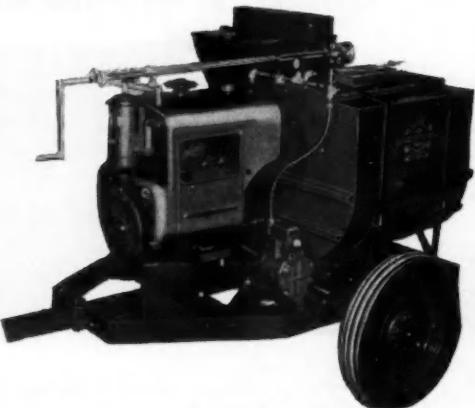
The Tried, Tested and Approved "BUFFALO TURBINE"
COMBINATION SPRAYER AND DUSTER

**Large Enough
For The
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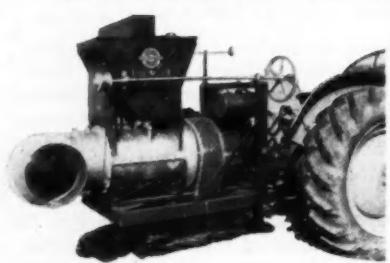
**Within The Price
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50 or 100 Gal. Tank
Skid or Trailer Model

For Orchard or Row Crop Spraying and Dusting



The "Buffalo Turbine" 3 Point Duster
Fits Hydraulic Lift on
ALL TRACTORS



The most powerful duster covering the greatest area on the market today. The "Buffalo Duster" has its own power and may be used on tractor-truck or jeep.

**The Exclusive
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Used in All Models

**Prices Start At Less Than
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AGRICULTURAL EQUIPMENT CO.
INC.

GOWANDA, NEW YORK

Gentlemen—Please send me full information on the Buffalo Turbine Sprayer-Duster.

I have approximately acres

in fruit consisting mostly of

Signed

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 Please arrange a demonstration.

OVER LIMING YOUR SOIL

(Continued from page 21)

test kits will give a less accurate evaluation.

Many factors must be considered in determining the quantity of lime to apply to insure that the pH value of the soil will be adjusted properly within a range of 6.0 to 6.5. It will take approximately the following quantities in pounds per acre of limestone (CaCO_3) to give the pH changes indicated.

Amounts of Limestone to Apply to Various Soils

Soil type	pH Range From 4.5 to 5.5	pH Range From 5.5 to 6.5
Sandy	Lbs. 1,500	Lbs. 2,500
Sandy loam	2,500	3,500
Loam	3,500	5,000

If hydrated lime is used for vegetables, the quantity applied should be reduced by 25 to 30 per cent. It takes more limestone on a heavier soil than on a lighter one to get the same results. If the soil lime requirement is over a ton to the acre, it is advisable to plow part of it under and broadcast the remainder on top after plowing and before discing.

Liming Materials

In any section of the country where magnesium may be deficient, the use of limestone containing 10 to 20 per cent magnesia (MgO) should be used if readily obtainable at a reasonable price. Finely ground limestones (80 per cent through a 100-mesh-to-the-inch screen) will be effective sooner than coarser materials. A finely ground limestone will be effective in 75 to 90 days after application, while results from the application of a hydrated lime may be observed in 30 to 40 days. Limestones are cheaper than hydrated materials and may be used on soils above pH 5.5 to maintain a favorable pH reaction. On soils below pH 5.5 perhaps some hydrated lime should be used for more immediate results.

In many crops the response to lime is related to the quantity of potassium in the soil. Onions, beets, spinach, cabbage, carrots, celery, tomatoes, cucumbers, muskmelons, and lettuce have given markedly better responses to potash on soil at pH 6.5 than on soils at pH 5.5. Crops of lettuce, cucumbers, muskmelons, celery, onions, spinach, beets and asparagus are generally benefited by lime more than most other crops.

Remember that lime application increases soil activity, causes organic matter to break down more rapidly, liberates more nutrients and so requires more attention to soil building practices and fertilizer addition if high crop production is to be maintained. Precautions must be taken to avoid overliming.

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FLORIDA

(Continued from page 15)

drainage and irrigation, and an adequate fertilizer program are essential for production on such soils. Most of these lands are very acid and a deficiency of calcium, magnesium, manganese, iron, zinc, copper and boron may be found.

The farm lands along the Atlantic Coast from West Palm Beach to Homestead constitute one of the largest winter vegetable sections in the United States. The production practices for a vegetable will vary between different areas as there are considerable differences within the state in climate, drainage, soil type and the size of the farm operation. Tomato producers in the Ft. Pierce and the Immokalee - Devil's Garden areas practice a remarkable farm operation in that they move to virgin soil each season in order to escape weed, insect, nematode, and disease problems. They must charge off the expense of road building, diking, clearing, bridge building, well and pump installation to a single tomato crop.

Recent Developments

One of the recent outstanding crop developments has been the rapid expansion of the sweet corn industry in Florida which rose from 6,000 acres in 1947-48 to 39,300 acres in 1953-54. The main new equipment development has been the use of mobile field harvesters for the harvesting and packaging of celery, sweet corn and certain leaf crops in the field.

The most noted change in handling methods occurred in the radish industry when in only two seasons the deal changed from bunched radishes to almost 100 per cent topped, pre-packaged radishes. The surging production of the Immokalee-Devil's Garden area has been the most noticeable of all producing areas. The most unusual soil in production could undoubtedly be considered as the "rock-lands" of South Dade County on which tomatoes are produced. Almost complete perfection in both drainage and irrigation has been achieved in the Sanford area by the use of a tile drainage system on sand land.

The most surprising production has been the increase in watermelons from 12,500 acres in 1942-43 to 98,000 acres in 1953-54 as well as shipments commencing in early April. Another current feature within the industry has been the increasing number of large-scale vegetable operations and the high degree of mechanization practiced on these farms.

All of these factors make Florida one of the most unusual vegetable areas of America. THE END

HIGHER YIELDS LOWER COSTS

thru Accurate Planting

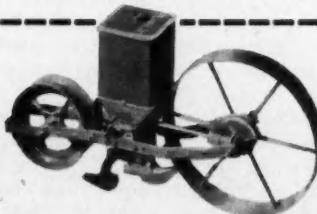
the **Planet Jr.** [®] way

If you want to take a big step toward maximum return per acre, start out this Spring with Planet Jr. There's a Planet Jr. seeding attachment available for practically every kind of planting. Team them up with world-renowned Planet Jr. garden tractors for an unbeatable profit-maker.



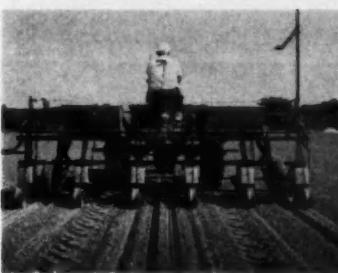
B8-R with 2-row seeder

Accurate die-cast feeding mechanism and shut-off, detachable hopper, 3 standard seed plates providing 39-size holes, combination floating and non-floating covers. With B8-R 2 1/2 h.p. tractor complete with automatic-disengaging reverse drive.

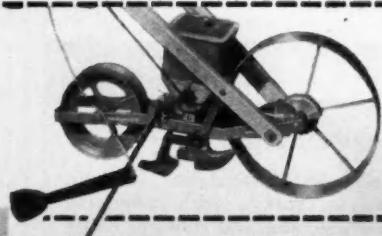


300A Drill Seeder

Ideal hand unit for small acreage, or as extra equipment for corner spots. Accurate planting by same famous Planet Jr. method.



7135X Seeder—Extensively used in commercial growing. Handles any vegetable seed from smallest up to bush limas. Sows through holes in plate, evenly and accurately when planting one or 16 rows at a time.



Big Six Seeder No. 160

For planting almost everything that grows in rows. 6 rows up to 24" apart or 4 rows up to 42" apart, most any combination in between. Accurate and seed-saving qualities unsurpassed.

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S. L. ALLEN & CO., Inc.
3419 N. 5th St., Phila. 40, Pa.

Please rush details on
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Name. _____

P.O. Address. _____ State. _____

**The
"Stainless-Steel Streamliner"
The World's Most Modern Concentrate Sprayer**



200 Gallon
Stainless-Steel Tank

Total Weight
Less Than One Ton

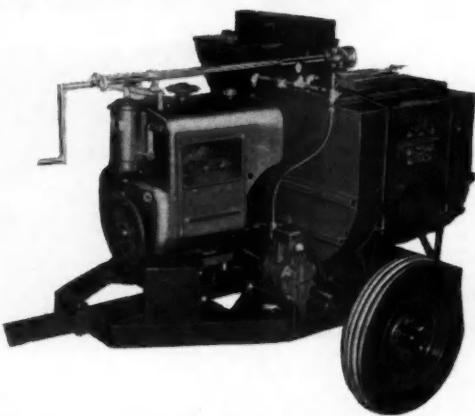
**The Tried, Tested and Approved "BUFFALO TURBINE"
COMBINATION SPRAYER AND DUSTER**

**Large Enough
For The
BIG GROWER**

**Within The Price
Of The
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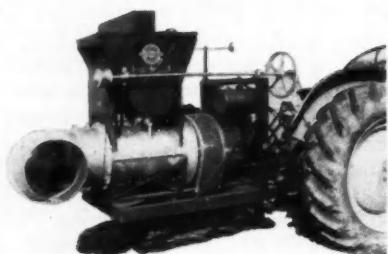
50 or 100 Gal. Tank
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For Orchard or Row Crop Spraying and Dusting



The "Buffalo Turbine" 3 Point Duster

**Fits Hydraulic Lift on
ALL TRACTORS**



The most powerful duster covering the greatest area on the market today. The "Buffalo Duster" has its own power and may be used on tractor-truck or jeep.

**The Exclusive
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Used in All Models

**Prices Start At Less Than
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BUFFALO TURBINE
AGRICULTURAL EQUIPMENT CO.
INC.
GOWANDA, NEW YORK

Gentlemen—Please send me full information on the Buffalo Turbine Sprayer-Duster.

I have approximately..... acres

in fruit consisting mostly of.....

Signed

Please arrange a demonstration.

OVER LIMING YOUR SOIL

(Continued from page 21)

test kits will give a less accurate evaluation.

Many factors must be considered in determining the quantity of lime to apply to insure that the pH value of the soil will be adjusted properly within a range of 6.0 to 6.5. It will take approximately the following quantities in pounds per acre of limestone (CaCO_3) to give the pH changes indicated.

Amounts of Limestone to Apply to Various Soils

Soil type	pH Range From 4.5 to 5.5	pH Range From 5.5 to 6.5
Sandy	1,500	2,500
Sandy loam	2,500	3,500
Loam	3,500	5,000

If hydrated lime is used for vegetables, the quantity applied should be reduced by 25 to 30 per cent. It takes more limestone on a heavier soil than on a lighter one to get the same results. If the soil lime requirement is over a ton to the acre, it is advisable to plow part of it under and broadcast the remainder on top after plowing and before discing.

Liming Materials

In any section of the country where magnesium may be deficient, the use of limestone containing 10 to 20 per cent magnesia (MgO) should be used if readily obtainable at a reasonable price. Finely ground limestones (80 per cent through a 100-mesh-to-the-inch screen) will be effective sooner than coarser materials. A finely ground limestone will be effective in 75 to 90 days after application, while results from the application of a hydrated lime may be observed in 30 to 40 days. Limestones are cheaper than hydrated materials and may be used on soils above pH 5.5 to maintain a favorable pH reaction. On soils below pH 5.5 perhaps some hydrated lime should be used for more immediate results.

In many crops the response to lime is related to the quantity of potassium in the soil. Onions, beets, spinach, cabbage, carrots, celery, tomatoes, cucumbers, muskmelons, and lettuce have given markedly better responses to potash on soil at pH 6.5 than on soils at pH 5.5. Crops of lettuce, cucumbers, muskmelons, celery, onions, spinach, beets and asparagus are generally benefited by lime more than most other crops.

Remember that lime application increases soil activity, causes organic matter to break down more rapidly, liberates more nutrients and so requires more attention to soil building practices and fertilizer addition if high crop production is to be maintained. Precautions must be taken to avoid overliming. THE END

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THE GROWER

FLORIDA

(Continued from page 15)

drainage and irrigation, and an adequate fertilizer program are essential for production on such soils. Most of these lands are very acid and a deficiency of calcium, magnesium, manganese, iron, zinc, copper and boron may be found.

The farm lands along the Atlantic Coast from West Palm Beach to Homestead constitute one of the largest winter vegetable sections in the United States. The production practices for a vegetable will vary between different areas as there are considerable differences within the state in climate, drainage, soil type and the size of the farm operation. Tomato producers in the Ft. Pierce and the Immokalee - Devil's Garden areas practice a remarkable farm operation in that they move to virgin soil each season in order to escape weed, insect, nematode, and disease problems. They must charge off the expense of road building, diking, clearing, bridge building, well and pump installation to a single tomato crop.

Recent Developments

One of the recent outstanding crop developments has been the rapid expansion of the sweet corn industry in Florida which rose from 6,000 acres in 1947-48 to 39,300 acres in 1953-54. The main new equipment development has been the use of mobile field harvesters for the harvesting and packaging of celery, sweet corn and certain leaf crops in the field.

The most noted change in handling methods occurred in the radish industry when in only two seasons the deal changed from bunched radishes to almost 100 per cent topped, pre-packaged radishes. The surging production of the Immokalee-Devil's Garden area has been the most noticeable of all producing areas. The most unusual soil in production could undoubtedly be considered as the "rock-lands" of South Dade County on which tomatoes are produced. Almost complete perfection in both drainage and irrigation has been achieved in the Sanford area by the use of a tile drainage system on sand land.

The most surprising production has been the increase in watermelons from 12,500 acres in 1942-43 to 98,000 acres in 1953-54 as well as shipments commencing in early April. Another current feature within the industry has been the increasing number of large-scale vegetable operations and the high degree of mechanization practiced on these farms.

All of these factors make Florida one of the most unusual vegetable areas of America. THE END

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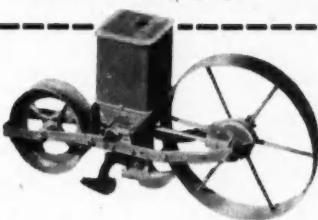
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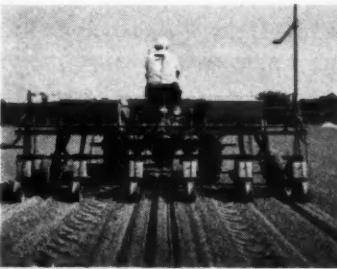
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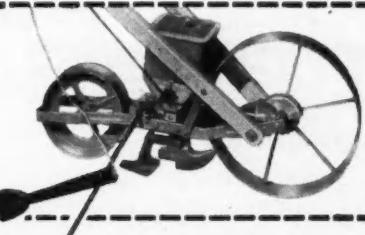
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Willoughby, Ohio

How Oregon Growers Get

TOP YIELDS OF POLE BEANS

A good fertilizer program and irrigation are two key steps to high production

By S. B. APPLE, Jr.

Oregon State College

MORE than 7,500 acres of pole beans were grown in the Willamette Valley of western Oregon in 1954. The average yield per acre has been in the neighborhood of 8 tons of graded beans. The better growers average 10 tons or more of graded beans, and yields of 12 to 14 tons per acre are not uncommon.

Many growers attribute their continued high production chiefly to proper fertilization and watering. Few bean "yards" are under-irrigated, but what about the soil-fertility maintenance program?

In the Willamette Valley of western Oregon, pole beans are grown mostly on river bottom soils subject to overflow and washing during the winter months. Cover crops such as Abruzzi rye, rye and vetch mixtures, and common rye grass are invaluable in protecting these soils from washing as well as for maintaining good physical condition.

Soil compaction is severe in many cases due to the use of heavy equipment for setting up the yards each year, cultivation equipment, insect control equipment, and the fact that the number of harvests ranges from five to 10. As a general rule, the growing cover crop is not fertilized and applications of commercial fertilizer begin in the spring when 30 to 50 pounds of nitrogen in the form of ammonium nitrate, ammonium sulfate, or calcium cyanamide are plowed down with the cover crop.

Most growers apply some nitrogen and all of the phosphorus fertilizer at

planting time. Band placement to the side of and below the level of the seed has been found to be the most effective method of application. Phosphorus fertilizers applied in this manner on soils known to be relatively high in "available" soil phosphorus have resulted in remarkable increases in early vigor and yield increases of from 1.5 to 3 tons per acre. Since 30 to 50 pounds of nitrogen and 120 to 150 pounds of phosphate (P_2O_5) are normally applied at planting, commercial fertilizers having a 1 to 3 or 1 to 4 ratio of nitrogen to phosphorus are in good demand.

Potassium is apparently not critical on the majority of the acreage devoted to pole beans and many growers do not include potash in their fertilizer. There are notable exceptions, however, and potash (K_2O) applications of 40 to 60 pounds per acre are not uncommon.

In addition to the nitrogen fertilizers applied when the cover crop is turned under and at planting time, nitrogen is commonly sidedressed once or twice more during the growing season. Since overhead irrigation is used almost exclusively, these late nitrogen applications are usually applied through the water. A total of 25 to 50 pounds of nitrogen per acre is the usual practice.

The pole bean grower who averages 10 tons of graded beans per acre at an average price of \$120 per ton is firmly convinced that the cost of 100 to 150 pounds of nitrogen, 120 to 150 pounds of phosphate (P_2O_5), and perhaps 40 to 60 pounds of potash (K_2O) is not excessive when such yields can be maintained. THE END



The Oregon Experiment Station has found that pole beans are apparently larger and more vigorous when phosphorus is applied in a band at planting time. Plants on the left received nitrogen plus 120 pounds per acre of phosphate, while those on the right were fertilized only with nitrogen.

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SEED TREATMENT

(Continued from page 13)

season advances and the soil warms up. This is especially true of sweet corn. If transplants are being grown, then the seed of pepper, eggplant, cucumber, lettuce, celery, and possibly cabbage, cauliflower, and broccoli, may be treated; or the soil in which they are planted should be sterilized to make damping-off less likely to occur. Seed of this group frequently does not show much response to treatment when they are planted out-of-doors in Ohio.

Most other vegetables are not benefited by treatment in the usual type of garden and field culture, and in fact some may be injured. Thus, it is likely that snap beans might respond to treatment by certain disinfectants and protectants if they were not so susceptible to injury by seed treatment, which is seldom recommended for this crop. Also, certain diseases of crucifers, such as black-leg and black-rot would be checked by treatment, but a better precaution is to obtain disease-free seed if possible.

Seed Protectants

The disinfectant types of seed treatment have been listed and it might be well at this time to mention some of the most commonly used protectants. Arasan is perhaps the best known of these today, with the possible exception of Semesan which formerly was used more than now because of its mercury content. Spergon and Phygon have come into quite general use during the past few years. Dow 9B is a compound similar to these two and can be substituted for Spergon in some instances.

A number of organic mercury compounds, as well as certain coppers of low solubility are still used to some extent, as is zinc oxide. Orthocide 75 is a comparative newcomer to the list, but is one of much promise. Most of these compounds are used as powders or dusts but two liquids, Vancide 51 and Panogen, are now being used. Formaldehyde has been used as both a liquid and dust.

Less common techniques are the fermentation soak to rid tomato seed of bacterial canker and the storing of celery seed for three or four years, during which time the spores of early and late blight will die.

In almost every instance there are other seed treatments besides those listed in the table and it might be well for anyone who wishes to treat large quantities of seed to check with his county agent or his agricultural experiment station and manufacturers' recommendations relative to any specific compound.

THE END

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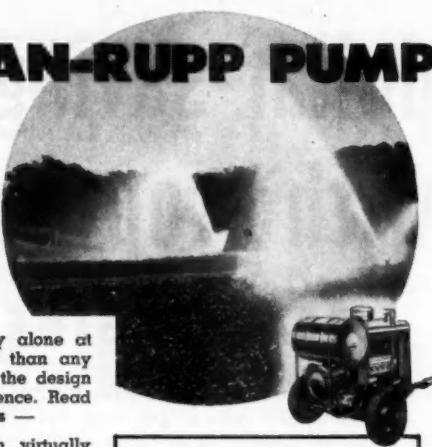
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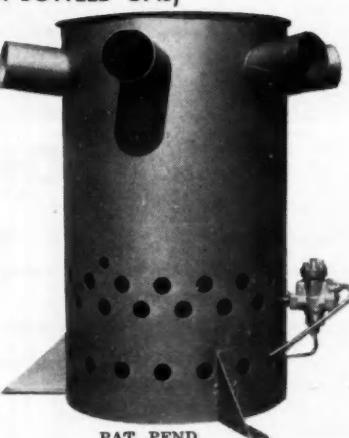
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SOIL NEEDS

(Continued from page 11)

are rather lengthy and standards have not been well established. Here, analysis of the plant is better suited for this purpose, and plant tests can be combined with soil tests.

3) *Fertilizers should be applied to maintain established nutrient levels.* In the past, fertilization of a crop was considered in terms of so many pounds of a particular analysis for a certain crop. As a result we had "truck crop" fertilizer, "tomato" fertilizer, "melon" fertilizer, etc. So many pounds of each were necessary to grow a crop.

Today, through soil tests we know that the idea is entirely false. There is no such thing as a "tomato" fertilizer. Also there are no arbitrary amounts that need to be used. In one field we can produce a bumper crop of tomatoes with 500 pounds of 3-9-12 per acre. On the same type of soil but in a different field, or in the same field under different weather conditions, it may take 4,000 pounds of an 8-8-8 to give an equally good crop. Also, the same analysis fertilizer may be used to produce melons, sweet-potatoes, or any other vegetable crop.

True, we do recognize that crops may have different needs, some requiring more or less nitrogen, phosphate, or other nutrient. However, we don't attempt to solve its needs by giving a particular amount of a certain analysis fertilizer. Instead, we let the crop tell us what it needs by using soil tests. This is how it is done:

Determine Nutrient Level

We first determine the ideal range for each nutrient for a particular crop. This can be done in several ways but most practical is to grow a crop under test conditions, varying the amounts of nutrient in question but keeping others in what appears to be satisfactory amounts. By measuring yield and quality produced under different nutrient levels we find the plant grows best in a certain range. The results can be illustrated by the graph on page 11.

The effect of varying one nutrient — nitrogen — on yields of lettuce is shown in this graph. Without any added soil nitrogen and by maintaining a level of about 10 pounds per acre, yield was only 2 pounds per plot. When nitrogen was added to maintain a level of about 25 pounds, yields jumped to 6 pounds. When nitrogen level was maintained at 50 pounds per acre, yields increased to 11 pounds. Increasing nitrogen level to 100 pounds gave yields of 12 pounds lettuce.

Further increases of nitrogen gave no further increase in yield. In fact,

when nitrogen pounds per acre were increased, the yield was decreased.

It is observed that there is a definitely positive correlation between 50 and 100 pounds per acre.

After 100 pounds per acre, the yield is not increased.

4) *Periodic soil tests are continuous to maintain nutrient level.* This is made for such as nitrogen, phosphorus, and potassium, which is the frequency of the soil, to be determined.

By periodic soil tests, the nutrient level is maintained and placed before the crop is harvested.

HAND

That's
Plants

Here's a
operator.

The large
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A small
planter.



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LYN

when nitrogen was stepped up to 250 pounds per acre, yields markedly declined. It should be remembered that in this study nitrogen refers to available soil nitrogen maintained and not to added amounts. These soils were checked every two weeks, and nitrogen was brought to desired level by adding nitrogenous fertilizers.

It is obvious from the above that there is a range where fertilizer definitely pays. For lettuce, it would seem desirable to keep the level between 50 and 100 pounds per acre.

After considerable study, it has been possible to set up a standard for nutrient levels for many different crops. In fact, varieties vary, and we are finding nutrient levels should be varied for some crops according to stage of crop.

4) *Periodic testing.* We need a continuous picture of the soil nutrient level. Periodic tests should be made for easily leachable elements such as nitrogen, potassium, magnesium, and boron as well as phosphorus which is easily fixed in the soil. Frequency of the test should vary with the soil, the crop, and the weather.

By periodic soil testing, a continuous log on nutrient levels can be maintained, with nutrients being replaced before levels drop so low that the crop is affected. THE END

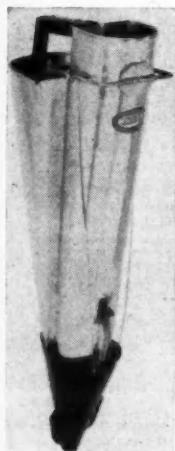
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At least vegetable growers and propagators can prevent heavy losses from Root Rot and Damping-Off, the sudden wilting of seedlings. The disease is caused by Rhizoctonia solani, a dangerous fungus which, once present, quickly spreads through the soil.

The damage has been severe in seed beds and cutting benches, particularly in crops grown under glass, but almost all green and woody plants are subject to the disease, according to researchers at one of the East's leading Experiment Stations.

Sunox, college tested and field proven over a period of years, has been found highly effective in the prevention and cure of Rhizoctonia-caused diseases. "It has given uniformly high results, often as much as 100% protection with a single application," reported plant pathologists at one of the nation's foremost universities.

Growers and propagators the country over are using Sunox with remarkable success, and Sunox preventive treatment costs so little that many are using it now as a standard procedure 2 to 3¢ up to 600 seedlings.

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Handy Cultivator



Late this fall a grower in Michigan showed us a new tool he had just purchased to cultivate in those places his tractor won't cover. He can now cultivate, as the above picture shows, with ease even when his crops have reached maturity. Known as the Hoette, the tool is powered by a specially designed 2 h.p. motor which drives four tempered blades adjustable for width. Light in weight, this new machine is truly a wonder, and I suggest you write David Hoff, Hoffco Inc., Richmond, Ind.

New Vegetable Wagon for Easy Backing

Out in Iowa they're making a wagon which is ideal for the vegetable grower. This new wagon has a patented steering arrangement which makes it as easy to back as a two-wheeled trailer. It is a wonderful wagon on which to load harvested vegetables, and is also ideal for carrying equipment. The E-Z-Bak wagon

Big Little Pump for Limited Irrigation

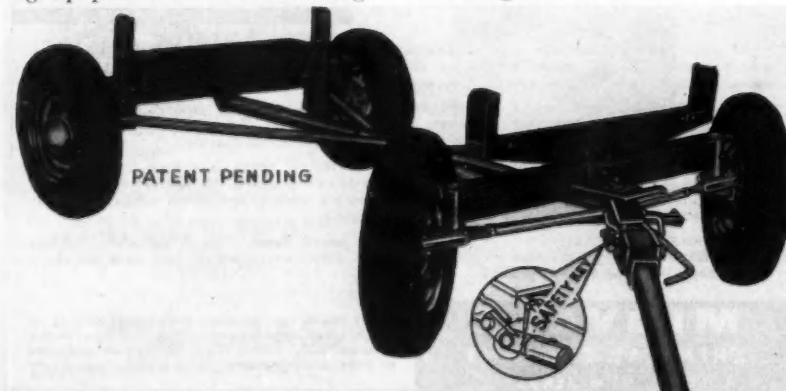
A self-priming pump for limited irrigation has just been developed by the famous Deming Pipe Co. Also ideal for a home water system, the "Minijet" (right) is powered by a 1/3 h.p. electric motor. The same pump can be used in either shallow or deep wells, and pumps up to 660 gallons per hour. For specifications and a descriptive booklet, write L. H. Taylor, Deming Pump Co., Salem, Ohio.

Vegetable Boxes

Not long ago I went through the Ohio Boxboard factory. They are developing an agricultural division to provide you with the most modern and strongest boxes, whatever your crop. I think it would be well worth your time to write Erwin Johnson, The Ohio Boxboard Co., Rittman, Ohio, asking for details on their vegetable line.



carries loads up to 8,000 pounds, and is equipped with heavy-duty axles and Timken bearings. It is made in two sizes—the 62-inch track and the 72-inch track—which straddle vegetable rows nicely. Why not write to the Sudenga Iron Works, George, Iowa, for a descriptive folder on the E-Z-Bak wagon?



Accurate Easy Bagging

Many growers are finding the new Auto Scale Head to be the answer to profitable vegetable bagging. This new machine includes a scale which quickly tells the operator how much over or under each bag is, and the famous Autobagger electric gate means high production. These two unusual features, coupled with rugged construction and adjustable legs to fit any packing line, makes the new Auto Scale Head a machine you should know about. Write to Reg Kiefer, Trescott Co., Dept. K, Fairport, N.Y.

Skinner Water Profits

I just saw the new Skinner sprinkler head, which is ideally suited to vegetable irrigation. The new sprinkler is constructed of brass, has a one-inch inlet, and can be ordered with seven different nozzle sizes ranging from 10 G.P.M. to 42 G.P.M. Rotating speed is easily controlled, and the sprinkler bearing is so well-fitted in the sprinkler body that sand and other abrasives are kept out. This new S-1000 sprinkler will save you irrigation money. Why not write to A. R. J. Friedmann, Skinner Irrigation Co., 803 Water St., Troy, Ohio, for full details?



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OPPORTUNITY ADS

Only 25¢ a word* for one-time insertion; 20¢ a word for two-time insertion; 15¢ a word for four-time insertion—CASH WITH ORDER. Count each initial and whole number as one word. ADDRESS AMERICAN VEGETABLE GROWER, Willoughby, Ohio.

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SOLVE YOUR VEGETABLE SPRAYING problems with one of our rebuilt and guaranteed John Bean high-pressure sprayers. We have 400- and 500-gallon tank outfits with 35-gallon pumps, both motor driven and power take-off. Wheel spacing and clearance will be converted to suit your needs. Attractively priced. MILLBURG GROWERS EXCHANGE, Benton Harbor, Michigan, southwestern Michigan's oldest and largest Bean dealer.

POTATO EQUIPMENT, COMPLETE LINE. 4-row Iron Age planter, 12-row Bean sprayer, Deere 2-row bed digger, Noffsinger harvester, 2 complete Lockwood graders, conveyors, bin fillers, seed cutters, self-unloading wagons, EHG Cletrac 68" with four-row cultivator, 4-row cultivator for OC-6 Oliver Crawler, Bean Roto-Beater, many other items. All in good shape. For full particulars, write or phone, MERLE HORSWELL, Williams, Iowa, Phone 3117.

NEW IRON AGE TRANSPLANTER, ONE-row, with fertilizer attachment. Bargain. GIESZIMANN IRRIGATION EQUIPMENT, Collierville, Illinois.

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MAKE \$75 AND UP EVERY WEEK, FULL or part time. Take orders for America's largest selling, nationally advertised LIQUID FERTILIZER. Sold with Money-Back Guarantee. No investment. Write "NA-CHURS", 255 Monroe St., Marion, Ohio.

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NATIONALLY ADVERTISED REBUILT, vacuum cleaners, \$39.95 FOB Youngstown, Ohio. World famous models with complete set of attachments: 1. Rug Nozzle, 2. Floor Brush, 3. Upholstery Tool, 4. Crevice Tool, 5. Dusting Brush. Including completely rebuilt motor with new parts. Also hose, dust bag, filter, 20' cord. Satisfaction guaranteed or your money back. Order yours today. Write BOX 103, AMERICAN VEGETABLE GROWER, Willoughby, Ohio.

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(Continued next column)

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Powerful self-propelled Jari with Rotary Tiller attachment tills 5" seed bed, safely cultivates right next to plants, mulches perfectly. Sturdy self-propelled Jari with sickle bar attachment cuts 36" swath thru weeds, brush, tall grass, work of lawn man. Other attachments: self-propelled reel mower, self-propelled snow thrower. Dealer for information and dealer. All products guaranteed.

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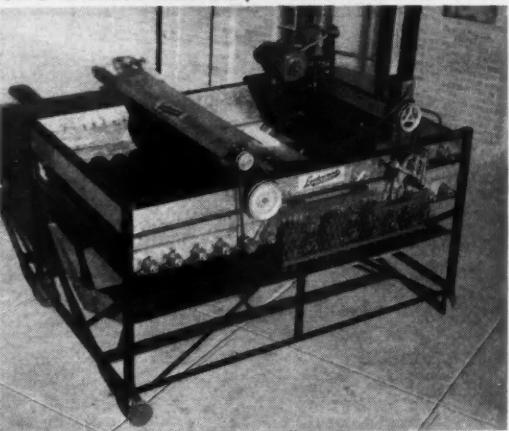


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MORE AND MORE VEGETABLE GROWERS are enjoying winter farming in Palm Beach County, center of winter production. Farms in the path of suburban development, soon grow into high price building lots. Contact E. H. BORCHARDT, Boynton Beach, Fla.

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CERTIFIED TOMATO, CABBAGE, PEPPER and Onion Plants. All leading varieties. Grown

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Engineered for multiple row rotary tillage cultivation. Kills 2, 4, 6, 8 or more rows of weeds at a time. Easy to operate. Accurate depth control. Cuts labor costs 50%—or more! Write for details today!

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183 Calumet St. Brillion, Wisconsin

**The Fertilizer Picture
in 1955**

SOME growers will remember that about 25 years ago the virtue of a fertilizer was judged largely on the basis of its dark color and strong odor. The tankage, blood meal, and fish scrap—nitrogen-containing materials—that were responsible for the color and odor have been largely replaced by synthetic chemicals. The fertilizer industry must be saluted for its progressiveness in keeping pace with the rest of the chemical industry.

Back in 1930 when farmers used a little over 5.5 million tons of fertilizer, the cost was only 13 per cent less than today, when over 21 million tons are used annually. The cost of other farm supplies has gone up about 125 per cent.

The past few years have seen a tremendous expansion in the available supplies of ammonium nitrate, synthetic urea, and anhydrous ammonia—products that contain from 33 to 87 per cent nitrogen as contrasted with the 5 to 10 per cent nitrogen contained in tankage and fish scrap or with the 16 to 20 per cent nitrogen contained in nitrate of soda or sulfate of ammonia. These new materials can be used by the grower on his vegetables if care is exercised in their application. At present they are considerably cheaper than the older, low-analysis products, and a competitive market should make them even more so in the future. Used in a soil-building program, they may ultimately be the means by which the organic matter content of vegetable soils can be more effectively maintained with grasses than with legumes.

Back in 1930, the average plant nutrient content of fertilizer was 17 per cent. Today it averages 26 per cent. It is 50 per cent more concentrated, so only two-thirds as much is required to produce the same effect. Contrast the widely used fertilizer analyses of 2-10-6 and 6-6-5 (nitrogen-phosphate-potash) in 1930, with the 5-20-20 and 12-12-12 mixtures that will be used this year. The latter represent an increase of over 100 per cent in plant nutrient content.

This change in concentration is of particular benefit on lighter soils where large quantities of plant nutrients are needed to satisfy rapidly growing vegetable crops. Many

times in the past it was impossible with low-grade fertilizers to supply sufficient nutrients to meet the needs of the crop without taking a chance on injuring them early in the season during a dry period. This year with high analysis fertilizers the amount applied can be reduced 40 to 50 per cent, yet the crop will be furnished with the same quantity of plant nutrients and the possibility of toxicity developing in dry weather will be reduced.

The low-grade fertilizers were formulated from materials that frequently contained small quantities of some minor elements that were of benefit in a few cases. For example, unrefined potash salts contain some boron. So, when the grower was handling twice as much fertilizer, paying for twice as many bags and twice as much freight as he will be doing this year, without knowing it he was occasionally partially supplying his crop with small quantities of some nutrient that had been limiting production.

The new high analysis fertilizers contain little of use to the plant other than the analysis indicated on the bag. This is a good feature in this day of precision agriculture, because it makes it possible to spot troubles immediately and take measures to correct them. However, it means that both growers and fertilizer distributors must be increasingly on the alert to diagnose unusual troubles and correct them by adding the necessary quantity of the required nutrient to the mixture.

Our Allied Industries

FARMERS in all phases of agricultural production can and should for a moment consider the many great contributions other industries have made to their own welfare.

We in the vegetable growing business can rightfully take pride in the progress our allied industries have made. To be sure, there is a profit motive behind every new machine, every new gadget, every new chemical, every new idea. But the new tool or new chemical or new package that has been developed and then accepted by us has also brought us profits. Manufacturing industries depend upon us too. If we cease to buy their products, their profits diminish.

Consider what the development of hydraulically operated equipment and tools has done for us. Hardly a vegetable grower in the country today does not use hydraulic equipment somewhere in his production line. Someone, a long time ago, thought up the idea. Dozens of others have picked it up, and now we have machines to move almost any size load merely by the touch of a finger. These industries have helped us overcome certain labor problems.

Manufacturers of chemicals have made our business of growing vegetables a little more profitable. It seems now that DDT has always been with us. But there was a time when flea beetles and leafhoppers took a heavy toll of every potato crop in every section of the country. DDT almost put a stop to this heavy loss. Industries have profited from the sale of DDT, and potato and vegetable growers have profited from its use.

Ten years ago we shipped carrots across the country just as they grew in the field. Today we package them in neat little film bags. Why? Because we can sell Mrs. Housewife a firmer, crisper carrot. But there is more. Someone thought up the bag idea. Others manufactured it, perfected its construction and use, then sold it to us.

We help industries by showing them where they can help us, and the profit is mutual. This is the kind of industrial co-operation that promotes progress in this country.

Coming Next Month

- Get Your Plants Off to a Good Start with Starter Solutions
- Enjoy a Year-Around Market with a Greenhouse
- Your Servant—The Garden Tractor
- Transplant the Proper Way

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GROWER



Here's the Oliver "OC-6" Crawler with the rugged Hi-speed Automatic Oliver Iron Age Potato Planter with extra-capacity seed and fertilizer hoppers.

Upgrade your potato crop with a Hi-speed OLIVER PLANTER

There's no question about it—top quality pays big dividends for potato growers. Big yields are important, too. That's why more growers each year are turning to the Oliver Iron Age Hi-Speed Planters with bandway fertilization.

Only with an Oliver do you get rugged construction plus precision placement of both seed and fertilizer. One-piece box-type frame holds furrow openers and planter gang in perfect alignment and carries the weight of large supplies of seed and fertilizer.

Sixteen picker arms per row provide slow-speed rotation of feeder mechanisms...even at fast ground speeds and close seed spacings. With an Oliver you get accurate seed spacing—just the way you set it—no flipping of the seed, no skips.

And Oliver's exclusive bandway fertilizer placement adds bushels and quality to your crop. You can have regular or uneven bands of fertilizer placed on the same level or at widely different levels in the soil...just the way you want them for your crop and soil condition.

See what we mean? For top quality and quantity, too, be sure you get an Oliver.

The OLIVER Corporation
400 West Madison St.
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Exclusive bandway fertilizer placement plus sixteen picker arms per row with 5-position adjustment of picks make the Oliver Iron Age Planter your best starter for a top-quality, big-quantity potato crop.

See your OLIVER DEALER for quality

VIGORPAK



ASGROW VIGORPAK* SEED

Seed of superior vigor • Scientifically pre-conditioned • Packed in airtight cans

FOR many years the ASGROW RESEARCH DEPARTMENT has studied the factors affecting the life of vegetable seed. It was found that, within limits, the drier the seed the longer it will keep its vitality. The higher the moisture content of the seed and of the surrounding atmosphere, the more rapidly will the seed lose its capacity to germinate and grow into healthy plants. From these studies ASGROW has perfected a way to process and package seeds so that they will keep their initial vitality for years under almost any storage conditions, short of killing temperatures.

The practical application of these investigations is in ASGROW VIGORPAK* SEED. The internal moisture of the seed is brought to a safe level for that particular kind of

seed, as determined by the ASGROW RESEARCH DEPARTMENT. Then, after treatment with an adequate seed protectant, the seeds are packed in moisture-proof cans and hermetically sealed. So long as it is in the unopened can, ASGROW VIGORPAK* SEED is protected not only from the adverse effects of high humidity but also from damage by insects and vermin and from loss by spilling or mixing. With these hazards eliminated, seed can safely be carried over to the following season, provided the can has not been opened.

*VIGORPAK is the registered trademark of ASGROW's pre-conditioned seed, packed in sealed, moisture-proof containers.

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